THE IRON TRADE REVIEW

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IN RIGHT DIRECTION

IS TREND OF EVENTS IN THE IRON WORLD,

But Improvement Comes Slowly—Steel Bars in Good Condition—Fair Sales of Pig Iron.

Developments of the past week have not been such as to justify exuberant optimism, but the trend of events is still clearly in the right direction. The statement of earnings of the United States Steel Corporation reflects the slow progress from the long period of depression. The fact that its unfilled orders have declined and that since July 1 new orders have increased are both to be considered with some allowance because new orders for finished materials frequently amount to no more than options to buy if conditions prove favorable for the purchaser. Activities of the Steel Corporation, measured by its blast furnace output, are now about 55 per cent, the highest since the middle of November last. Corporation pig iron stocks are being steadily reduced.

Pig Iron Conditions

In the pig iron market, New England is still the most active section in the east. Sales of 1,500 tons of malleable, 1,000 tons of foundry, scattering lots aggregating 2,000 tons, and other smaller transactions, are reported in that section. A leading Virginia interest is storing iron in anticipation of an advance and is about to blow in another stack. The Woodward Iron Co. is sold up to Nov. 1 on No. 2 foundry. In the central west the transaction which is attracting most attention is the sale of from 8,000 to 10,000 tons to stove interests at Detroit on a basis of about $16 delivered. Considerable part of the tonnage was for southern iron sold at $11.50 Birmingham for No. 2, the freight rate being $4.50. It is understood, however, that the southern iron was sold by brokers, who bought for speculation some time ago at low prices, and the transaction does not indicate that southern furnaces would sell at $11.50 for the deliveries provided for by the Detroit contracts, which extend into the first half of next year. Cast iron pipe makers in eastern Pennsylvania have been buying pig iron rather freely and more interest is shown in the market at St. Louis, Buffalo and other points.

Steel Bar Contracts

Renewed activity in steel bars is reported in the Chicago and Cleveland districts. In the former, the principal producer has about 90,000 tons on its books, including one order for 15,000 tons taken this week, and in the Cleveland district orders aggregating 50,000 tons have been placed. The bar iron market is quiet, and the mills that are resuming are doing so without definite assurance of being able to continue in operation.

Sheets, Shapes and Rails

There is an increased demand for sheets and the capacity of the principal producer has been increased, but independent interests are still cutting prices. The contract for 11,000 tons of structural steel for the 25-story office building to be erected by the Oliver estate at Pittsburg has been awarded the American Bridge Co., which will also fabricate the 750 tons for the new 12-story May building in Pittsburg. Increased building activity in Pittsburg, which was hit so hard by the panic, is regarded as a favorable indication. The Chesapeake & Ohio railroad has ordered 10,000 tons of standard sections, and the Boston & Maine 7,000 tons, and there is a fair demand for light rails, but the railroads are still small contributors to the volume of new business. Johnstown, Pa., has placed an order for 5,300 tons of cast iron pipe.

LATE NEW YORK NEWS.

(Special Telegram.)

New York, July 29.—The Lackawanna Steel Co. has booked an order of the Boston & Maine R. R. for 7,000 tons of rails for early delivery. Railroad business is expected to be light until freight rates advance.

It is officially stated that the Carnegie Steel Co. will supply 11,000 tons of steel for the Oliver building at Pittsburg. The American Bridge Co. has taken 2,000 tons for viaduct work for the Kanawha & Michigan Central. An 800-ton job for the Northwestern system was placed with an independent interest.

Brisk inquiry is reported for foundry iron for fairly prompt shipment, ranging up to 1,500-ton lots. A 1,500-ton inquiry for ferro-manganese is current, also one for 200 tons of ferro-silicon.

MILL MEN STRIKE.

(Special Telegram.)

Cincinnati, O., July 29.—Four hundred employes of the Newport Rolling Mill, Newport, Ky., went on strike Tuesday afternoon. Notice of holding back pay for two weeks in order to change wages to tonnage basis caused the trouble. President P. J. McArdle is expected at Newport today to settle the difficulties.

New Jones & Laughlin Building.—The finishing touches are now being put on the elegant building at Third avenue and Ross street, Pittsburg, which the Jones & Laughlin Steel Co. is intending to occupy as its general office headquarters. It is expected that the offices may be transferred from the present quarters which adjoin the new structure, sometime during the month of August. The new building is of pressed brick and stone, eight stories in height and presents an imposing appearance.

THE WEEK IN IRON CENTERS

PITTSBURG.

Improvement is Slow—Activity in Tin Plate Declines.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., July 28.

There is some ground for encouragement in the developments which the iron and steel industry is now presenting, but the very existence of this fact is permitting of ready exaggeration and of the spreading of ill-advised reports. It is scarcely expected that the recent improvement which has been felt by some companies, particularly those of the United States Steel Corporation, will be maintained week in and week out, by reason of the unsettled conditions that still prevail throughout the country. Confidence is slowly returning to consumers, generally, but from the railroads, the largest users of iron and steel products, but little additional buying of rails and supplies is expected this year owing to the rapidly passing season.

The activity in tin plate, which for months during the business depression remained almost the only bright spot in the whole iron and steel industry, is now on the decline because the market's main support, the canning interests, have about provided for the season's requirements. The excellent fruit and vegetable prospects have enabled the American Sheet & Tin Plate Co. to dispose of practically 80 per cent of a normal season's output and the independents have done about as well. Mill operations in tin plate may now be expected to be greatly curtailed.

Reports of mill activities show the Carnegie Steel Co. now to be running 29 of a total of 55 blast furnaces or about 53 per cent and two additional stacks will probably be blown in shortly. The entire Carrie group of seven furnaces, which ordinarily supplies metal to the Homestead works, is in full blast. The latter works are operating on very favorable schedules. The National Tube Co. at present has six furnaces in action out of a total of 11. The Republic Iron & Steel Co. this week started four additional iron mills and is now working at a slightly increased capacity compared with that before its three weeks' shut-down.

Pig Iron.—A slight increase of activity in pig iron is apparent although the open market sales have generally been of the small order. Fostered by the irregularity which recently characterized the market, there is a disposition among buyers and sellers to carry on their negotiations quietly, and it is believed considerable tonnage has been disposed of without widespread inquiry, including 5,000 tons of foundry iron to a Pittsburg melter sometime ago. The market, as a whole, is no stronger and shows some sagging qualities, notably in Bessemer.

In foundry iron, there is some inquiry running into next year, but furnaces as a rule are inclined to avoid quoting so far ahead. The usual price is $15 valley for delivery iron and $14.75 valley for prompt. A large local consumer is in the market for 7,000 tons of Nos. 2, 3 and gray forge for delivery during the next several months to two plants in this territory and one in the southwest.

Low prices are noted in Bessemer. A steel foundry took 300 tons this week at a price reported to be $15.60 valley or a shade higher. Another steel interest bought 400 tons for August, September and October. In malleable a sale of 600 to 700 tons for this territory was made the past week at $15 furnace.

Basic is reported to be going at various prices, sales of 50 tons at a little above $15 valley and of several aggregating 500 tons at $15.25 valley being announced. There are no large inquiries in sight to firmly establish the market.

The stack of the Youngstown Steel Co., which had been on Bessemer and washed metal, has been blown out and the Ella furnace at West Middlesex has resumed, leaving valley operations unchanged. The stocks of Bessemer and basic iron in the valleys are now about 53,000 tons. For third quarter delivery on northern iron, we quote as follows:

Bessemer, valley	$15.60 to 16.00
Bessemer, Pittsburg	16.50 to 16.90
No. 1 foundry, Pittsburg	15.90 to 16.15
No. 2 foundry, Pittsburg	15.65 to 15.90
Gray forge, Pittsburg	14.90 to 15.15
Basic, valley	15.00 to 15.50
Basic, Pittsburg	15.90 to 16.40

Ferro-Manganese.—Consumers are entering the market for small tonnages of ferro alloys, though occasional good-sized sales are being put through. A Chicago car wheel manufacturer has taken 750 tons of ferro-manganese for delivery into next year at an average price of about $44 seaboard. Some inquiry is out for 1909 shipment and sellers are holding at a minimum of $46 seaboard. For delivery this year the market is from $44 to $45 Baltimore or $45.95 to $46.95 Pittsburg. Prompt prices are lower. Imported 50 per cent ferro-silicon is quoted $70 Pittsburg on forward deliveries; domestic 12 per cent, $29; 11 per cent, $28; 10 per cent, $27. The lower grades of imported ferro-silicon are upon about the same basis. These quotations are applicable to Pittsburg territory.

Plates.—Conditions in plates are practically unchanged, and the market as a whole is quiet. The Homestead works of the Carnegie Steel Co. is running on a fair schedule, being supported largely by the steady demand for line pipe material. The principal project which is now commanding the attention of the mills and manufacturers is that of a riveted pipe line for the water works system of the city of Brooklyn, which will require 26,000 or more tons of plates. Shading of prices by some mills continues. We quote:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.60c f. o. b. mill Pittsburg. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—A sustained improvement is apparent in sheets in practically all grades. Actual needs are forcing increased specifications, as stocks with jobbers have been exceedingly light. The leading sheet producer started additional mills this week, and is operating 55 per cent of capacity, against 47 per cent last week, which is the highest point reached for a number of months. Some price shading in sheets is current. We quote:

Black steel sheets, cold rolled, No. 28 gage, $2.50 per 100 pounds, and galvanized sheets, No. 28 gage, $3.55 per 100 pounds, plus the regular extras.

Blue annealed: Nos. 11-12, 1.85c; Nos. 13-14, 1.90c; Nos. 15-16, 2c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation; and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

Tin Plate.—The turn has come in tin plate and the normal seasonable decline of the market is under way. The canning interests have practically covered for their requirements relative to the fruit and vegetable crop, and unless the latter yield exceeds

expectations little additional specifying against contracts from this source is anticipated. During the past eight months or throughout practically the entire industrial depression, tin plate has remained the most consistently active of all iron and steel products. The operations and output of the American Sheet & Tin Plate Co. during this period have averaged about 80 per cent of normal. The mill operations of this interest are now being curtailed, and considerable capacity was made idle the past week, including 20 mills at the New Castle and 10 mils at the Shenango plants. We quote:

Coke tin plate, 100-pound basis, 14 x 20, $3.70 f. o. b. mill Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—As anticipated, the Chesapeake & Ohio railroad closed this week for 10,000 tons of standard sections, which will be divided between the Carnegie Steel Co. and the Maryland Steel Co. Other rail business is now under negotiation, and estimates are being made by different railroads for next year's rail requirements, but little additional tonnage is expected to be placed for this year's delivery. The demand for light rails is firm, and orders of the local maker this week aggregated 2,000 tons. With the advances in old material, quotations on re-rolled rails are being elevated by re-rollers. The spike trade shows no change from the past, and the orders are small and for quick shipment. On present specifications on Bessemer rails we quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $36; 12-pound, $32; 16-pound, $30; 20-pound, $29; 25 to 45-pound, $28; angle splice bars for standard sections, $1.65; standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

Steel.—Beyond some increase in specifications against contracts, the situation in steel has not been changed. New business in billets is light. The decline in tin plate production is affecting the sheet and tin bar tonnage, but specifications are still in good volume.

Bessemer and open-hearth billets, base sizes, are quoted at $25 Pittsburg, and forging billets at $27 Pittsburg, subject to the division of the freight charge over $1 and not exceeding $3, and sheet and tin bars at $27.50 Pittsburg, valley and Wheeling territory, and $27 Pittsburg for delivery to other points.

Hoops, Bands and Cotton Ties.—The hoop and band market is quiet at this time, but prospects for fall business are good. We quote:

Cotton ties, 85c per bundle Pittsburg, plus the freight on lots of 3,000 bundles or more, and 88c per bundle Pittsburg for less than 3,000 bundle lots.

Hoops in carload lots, 1.80c; in less than carload lots, 1.90c; bands, 1.40c, base half extras as per standard steel.

Merchant Bars.—Specifications of a comparatively large tonnage are being received by steel bar mills, but new business is not heavy. Bar iron continues quiet. By obtaining their material at from $1 to $2 a ton under steel bars, resulting from the open eastern market and the control of subsidiary mills, nut and bolt makers are consuming bar iron generally in preference to steel. The Republic Iron & Steel Co. increased its operations this week to include the Corns works, Massillon, O., Inland works, East Chicago, Ind., Sylvan works, Moline, Ill., and Tudor works, East St. Louis, Ill., nearly all of which, after the three weeks' shutdown, are running full. Last week the company started its Bessemer plant, Brown-Bonnell works, and Mahoning Valley works at Youngstown. Shafting is fairly steady. We quote:

Common iron bars, 1.40c Pittsburg in carload lots and over; 1.45c in less than carloads; 1.32c to 1.35c base Pittsburg plus freight to point of shipment on western deliveries; Bessemer steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, under 3 inches, 1.50c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting 56 per cent in carloads, and 52 per cent less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.80c base. Iron finished tire under 1½ by 1½ inches, 1.75c; iron finished tire, 1½ by 1½ inches and over, 1.60c. All tire subject to ½ extra on the steel card.

On cold rolled strip steel, width 1½ inches and wider and 0.100 inch and thicker, we quote base prices per 100 pounds, $3.35 on hard and $3.60 on soft.

Structural Material.—A number of smaller projects are being released from estimators' hands, and inquiries for structural material are more plentiful. There is no improvement as to railroad work. The mills are being enabled by numerous small specifications to operate at fair schedules. Quotations by fabricators show no tendency to advance. Preliminary work has been started upon the construction of the 25-story office building to be erected in this city by the Henry W. Oliver estate. The rear portion of the structure will be put up this fall, and it is expected that the building proper will be ready for occupancy by April 1, 1910. The 10,000 to 12,000 tons of fabricated steel required will be furnished by the American Bridge Co., and specifications will likely be filed this fall with the Carnegie Steel Co., which will supply the material. The American Bridge Co. will also fabricate the 750 tons required for the new 12-story May building in this city. We quote:

Beams and channels, 15-inch and under, 1.60c; over 15 inches, 1.70c; zees, 1.60c; tees, 1.65c; angles from 3 to 6 inches, 1.70c; universal and sheared plates, 6¼ inches and wider, 1.60c base.

Merchant Pipe.—A quiet but steady improvement in pipe is being sustained. Merchant pipe is better, and oil and gas field goods which have been active show undiminished strength. Jobbers are taking more tonnage, but their stocks are still light. The National Tube Co. is now operating six of its 11 blast furnaces with good prospects for gradually increasing its production. We quote the following official base discount, with an additional one point and five off to jobbers:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
¾ to 6 inches....	75	65	73	63

Boiler Tubes.—The demand for boiler tubes shows an increase, but this cannot be attributed to the railroads which are still buying for bare maintenance. We quote the following official base discount to the general trade:

BOILER TUBES.

	Iron.	Steel.
2¾ to 5 inch.....	52	65

Wire Products.—Though there is less briskness in the trade, a cheerful sentiment is ruling the market. More confidence is generally displayed and prospects for a favorable fall business are improving. Jobbers and consumers are practically bare of stocks. We quote: Wire nails, jobbers' carload lots, $1.95; retailers' carload lots, $2; painted barb wire, jobbers' carload lots, $2.10; retailers' carload lots, $2.15 with 30c for galvanizing;

plain wire to jobbers in carloads, 1.80c; and to retailers in carloads, 1.85c.

Wire Rods.—Manufacturers are buying and specifiying very cautiously, and we quote $33 on Bessemer and $34 on open-hearth rods.

Coke.—The coke market is somewhat quieter than it has been, but a few contracts for extended delivery are being regularly made, particularly in foundry coke. The cars on track have decreased and the situation has been strengthened by this fact, as sales under pressure have been repeatedly made at low prices. The threatened water famine in the Connellsville regions has been greatly relieved by recent rains and conditions in this respect are improved. We quote standard Connellsville foundry coke at from $2.00 to $2.25 ovens, and Connellsville furnace coke at from $1.65 to $1.85 ovens. Production is increasing and the figures of the *Courier* for the week ending July 18 show 17,903 active ovens with an output of 185,093 tons compared with 17,527 active ovens and 174,729 tons the previous week.

Old Material.—Considerable activity and excitement has been prevailing in the old material market owing to a sharp increase in demand, particularly in heavy melting stock. A number of dealers who are short on contracts have been buying freely and some quiet transactions have been put through by principal consumers in this district. Purchases of heavy steel as high as $15.25 are reported. The market now shows less feverishness. The advance in prices has brought heavy melting stock and basic pig iron closely to a parity, a condition which has not been duplicated since several occasions in 1905 when the two were selling at practically the same basis. We quote gross tons delivered in the Pittsburg territory as follows: Heavy melting scrap, $14.50 to $15.00; rerolling rails, $15.50 to $16.00; bundled sheet scrap, $11.50 to $12.00; iron axles, $20.00 to $20.50; old iron rails, $16.00 to $17.00. No 1 wrought scrap, $14.00 to $14.50; old car wheels, $14.00 to $14.50; low phosphorous, $18.00 to $18.50; machine shop turnings, $8.75 to $9.25; cast borings, $8.50 to $9.00; No. 1 cast scrap, $14.00 to $14.50.

Will Sell Assets.—Under an order issued by the federal court at Trenton, N. J., July 27, the assets of the Passaic Steel Co., Paterson, N. J., will be sold under foreclosure of the mortgage held by the Citizen's Trust Co., as trustee of the $2,500,000 bonds issue of 1902. Merchandise creditors, with claims of $108,000 and with unpledged assets of $254,000, withdrew their opposition to this course when the court ruled that their standing when the distribution is made after the sale shall be the same as at the present time.

CHICAGO.

Progress Continues At a Slow Gait—Bar Business Prosperous.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, July 28.

The transactions of the week in this market afford no occasion for enthusiasm, nor have they given cause for doubting the reality of the progress in the direction of improvement. With over 100,000 tons of bars contracted for and, what is more, with consumers of bars definitely assured of a market for their product, this branch of finished steel materials may well be considered as thoroughly prosperous. The week recorded also an unusual buying of light rails and in addition brought the regular specifying by the railroads against contracts for track fastenings. Mill resumptions are for more or less temporary operations, as they have been, but it can be noted that mill operators are looking toward the future much less hopelessly and indefinitely than was true two months ago. In structural material, but few contracts are being placed, but prices are better. The demand for wire goods has fallen off temporarily with the exception of wire nails, but the prospect for fall business is encouraging. The market for old materials is again on the ascendant and the dealers making the level of prices seem willing to buy at the advance. Sales of scrap are in small lots and the larger consumers refuse to pay the higher prices. Pig iron is not active, but is far from a condition of stagnation. Buying is paralleling the actual melt very closely which is not an unfavorable condition, and for immediate consumption the amount of iron required in small lots is well maintained in volume.

Pig Iron.—Nothing akin to what is reported as an embryonic buying movement in the east can be found in this territory nor do conditions point to any opportunity for such a development. At the same time, the past week has not been extreme in its quietness. One aggregate of 1,500 tons of foundry iron was sold to a consumer melting iron at various points in central west territory by a local furnace, which interest also placed additional miscellaneous business in small lots amounting to as much more. The local car wheel manufacturer bought 700 tons of high silicon Tennessee iron. A sale of 800 tons of northern Alabama gray forge iron brought a price of $10.75 at the furnace. Aside from these transactions purchases were in lots from carloads to a few hundred tons with the smaller quantities much in the majority but fairly numerous. The interests buying iron at this time are very miscellaneous in their character and there is small chance of drawing inferences regarding the general disposition of the trade. The Republic Iron & Steel Co. is reported to have joined the Tennessee Coal, Iron & Railroad Co. in holding for $12.50 for No. 2 at Birmingham and it is given out that Pioneer iron is sold up through the third quarter. Other Birmingham furnaces continue to ask $12 for No. 2 with other grades on that basis. This is 50 cents higher than the makers of high phosphorus iron are credited with offering. Locally the furnaces are not disposed to sell for less than $17 furnace, which results in some outside iron being brought into this territory. We quote as follows:

Lake Superior Charcoal	$19.50 to 20.00
Northern Foundry No. 1	17.50 to 18.00
Northern Foundry No. 2	17.00 to 17.50
Northern Foundry No. 3	16.50 to 17.00
Southern Foundry No. 1	16.35 to 16.85
Southern Foundry No. 2	15.85 to 16.35
Southern Foundry No. 3	15.35 to 15.85
Southern Foundry No. 4	14.85 to 15.35
Southern No. 1 Soft	16.35 to 16.85
Southern No. 2 Soft	15.85 to 16.35
Southern Gray Forge	14.60 to 15.10
Southern Mottled	14.35 to 14.60
Southern Silveries, 4 per cent Silicon	17.85 to 18.35
Southern Silveries, 5 per cent Silicon	18.35 to 18.85
Southern Silveries, 6 per cent Silicon	19.35 to 19.85
Jackson Co. Silveries, 6 per cent	19.90 to 20.40
Jackson Co. Silveries, 8 per cent	20.90 to 21.40
Jackson Co. Silveries, 10 per cent	21.90 to 22.40
Malleable Bessemer	17.25 to 17.75
Standard Bessemer	18.25 to 18.75
Alabama Basic	16.35 to 16.85

Billets and Rods.—A few small lots of billets are reported sold during the past week, one small order being for axle billets and another order coming from a Toledo, O., manufacturing interest. The commercial demand for billets in this market has come to be very limited and the number of consumers of billets who buy in mentionable quantity in the market is very small. No unusual transactions featured the trade of the week in wire rods. We quote rolling billets $26.50, and forging billets $28.50, base Chicago. We quote, f. o. b. Pittsburg, Bessemer wire rods, $33; open-hearth, $34; and chain rods, $33.

Merchant Bars.—Manufacturers of steel bars view with increasing satisfaction the situation with respect to this product. Illinois mills have gathered in a very encouraging percentage of the agricultural bar tonnage and the leading interest has more than 90,000 tons of orders on its books, of which 15,000 tons were included in a single order received at the beginning of the present week. Buying is not yet concluded, it is understood. Specifications on the contracts placed are

coming in in schedule volume and last week all of the Bay View mills of the Illinois Steel Co. were running, while five out of six are operating this week. Prompt shipment is being asked on these orders very uniformly and the material is going into finished product for delivery late this year and in 1909. Work has been resumed in part at the mills of the Republic Iron & Steel Co. and one train of rolls at the Sylvan mills, Moline, and three trains at the East Chicago mill are running. Bar iron orders are slow in coming and an atmosphere of listlessness prevails in this bar market. It is expected that the new merchant mill of the Inland Steel Co. will be started up on Wednesday of this week. The additions to the Inland Steel Co. plant include, beside the above mill, a new sheet bar mill and blooming mill. In company with the general quietness in the structural situation, there seems to have been a slight falling off in reinforcing bar requirements. Market prices are without change and we quote as follows:

Bar iron, 1.50c to 1.53c; soft steel bars and bands, 1.58c, half extras; soft steel angles, less than 3 x 3, 1.68c; hoops, 1.98c base, full extras; planished or smooth finished tire steel, 1.78c; iron finish, up to 1½ x ½-inch, 1.73c base tire card; iron finish, 1½ x ½-inch and larger, 1.58c base steel card; channel for solid rubber tire, ¾ to 1-inch, 2.08c, and 1⅛-inch and larger, 1.98c; smooth finished machinery steel, 1.83c; flat sleigh shoe, 1.63c; concave and convex sleigh shoe, 1.83c; cutter shoe, 2.05c; toe calk steel, 2.13c; railway spring, 1.93c, base steel card; vehicle spring steel, 1.98c base, vehicle card; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 56 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.90c to 2c, full extras; soft steel bars, 1.80c per 100 pounds base, plus half extras; soft steel hoops, 2.30c, full extras.

Plates.—The demand for plates locally in anything like noteworthy quantities is curtailed to the minimum. The resumption of car building is looked upon as the source of revival in the volume of plate tonnage moved, and, while there is apparent need of much car building, actual work seems possible of indefinite postponement. We quote:

Plates, ¼-inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.78c Chicago. For extras see Pittsburg report. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼-inch and heavier, up to 72 inches wide, 2c to 2.10c; from 72 to 96 inches wide, 2.10c to 2.20c; 3/16-inch up to and including 60 inches wide, 2.10c to 2.15c; 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.10c to 2.15c; flange and head quality, 25c extra.

Sheets.—During the week what might be considered a fair buying of sheets was reported. The movement from store was slightly in excess of the preceding week and from the standpoint of such mills as are active, business about held its own. Such trade as does exist is largely in galvanized and roofing sheets, the heavier grades being considerably neglected. Prices are adhered to with fair uniformity. We quote as follows, prices being from store. For mill prices see Pittsburg report.

No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c. Galvanized sheets, No. 10 to 16, 3.05c to 3.10c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 4.00c; No. 30, 4.40c to 4.50c.

Structural Steel.—The only feature of the structural steel situation which smacks of improvement is the one of prices. Bids submitted show less variation and a generally higher level, though this may be laid in part at least to the fact that almost all of the work being let is of small tonnage and consequently less desirable. The foundation contract for the Chicago city hall is about to be let, which will be followed, it is expected now, with the letting of the structural steel contract in about a month. This will bring into the market a much postponed 12,000 tons. During the week, the general quietness is reflected by the fact that the leading fabricator took contracts at its Chicago office for a total of about 1,400 tons of miscellaneous work, about half of which was divided among the several western railroads, among them the Northern Pacific, Chicago & Northwestern, Chicago, Burlington & Quincy. The Ford Motor Car Co., Detroit, has inquiries and drawings out for a new building which, if built of steel, will require 1,600 tons. Alternate bids are asked, however, for concrete construction figures. The Spalding-Merrick building is again open for bids, the last modification of plans calling for a reinforced concrete building which will require only 350 tons of structural steel. Originally the building called for nearly ten times this amount of steel. The Chicago Railways Co. will build a paint shop and barns requiring 500 tons of steel. Mill prices are unchanged and we quote as follows:

Beams and channels, 3 to 15 inches, inclusive, 1.78c to 1.81c delivered Chicago. For extras see Pittsburg report. Quotations from store are as follows for carload lots and over:

All angles, 3 inches and larger, including 6 inches, $1.95 per 100 pounds; angles over 6 inches, $2.05 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.95 per 100 pounds, base; channels, 3 inches and larger, $1.95 per 100 pounds, base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—In standard section rails there is nothing of interest to report. A very good volume of light rails was purchased in this market and the leading interest is reported to have had the largest week of the year with respect to this class of rails, booking over 2,000 tons last week and beginning the present week with 500 tons in one day. Specifications on track fastenings contracts are being received in increased volume. The character of this specifying is indicated by an order for 40,000 angle bars from the New York Central Lines received during the week. Similar specifications, all of which require prompt shipment, are being received for regular quotas of spikes and bolts. The Pennsylvania Steel Co. took orders for about 200 tons of light section street railway rails and also about 2,000 pieces of special track work. We quote:

Standard rails, $28 f. o. b. mill, full freight to destination; light rails, 25-pound to 45-pound, $28; 20-pound, $29; 16-pound, $30; 12-pound, $31. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.20c to 2.25c; with hexagon nuts, 2.35c to 2.40c. Small railroad and square boat spikes, 1.90c base, f. o. b. Chicago.

Cast Iron Pipe.—The principal contracts of the week went to the United States Cast Iron Pipe & Foundry Co., which interest took 600 tons of pipe at Springfield, O., 500 tons at West Branch, Mich., 300 tons at

Portsmouth, O., 300 tons at Burlington, Wis., and a similar amount at a Nebraska town. On small size pipe, prices are slightly firmer, but we continue to quote as follows, 4 to 6-inch pipe, $27; 6 to 16-inch, $26; larger sizes, $25; gas pipe, $1 a ton higher.

Merchant Pipe and Boiler Tubes.—The merchant pipe business is maintaining a more satisfactory volume, but generally the trade in tubular goods is quiet. The future seems to hold in store a brisk demand for locomotive boiler tubes.

We quote mill discounts, Chicago delivery, carload lots, as below. On steel pipe jobbers are allowed a concession of one point and 5 per cent additional from the schedule in force.

	—Steel—	
	Black.	Galv.
¾ to 6 inches, inclusive.....	73.2	63.2
7 to 12 inches, inclusive.....	70.2	55.2
BOILER TUBES.		
	Steel. Iron.	Seamless.
2¼ to 5 in., inclusive....	63.2 50.2	50.2

Mill quotations on iron pipe are three points higher than the foregoing prices.

We have revised our prices from store, as below. A concession of one-half to one point from these prices is allowed by Chicago jobbers on carload orders shipped from local stocks. We quote for less than carload lots as follows:

MERCHANT PIPE.

	—Steel—	
	Black.	Galv.
⅛ to ¼ inch.....	65	49
⅜ inch	67	53
½ inch	69	57
¾ to 6 inches.....	73	63
7 to 12 inches.....	69	54

Store prices for wrought iron pipe, carload lots, from Chicago stock, are as follows: One-eighth to ¼-inch, 61c; ⅜-inch, 63; ½-inch, 65; ¾-inch to six inches, 70; 7 inches to 12 inches, 67. Boiler tubes from store are unchanged at 60 off.

Wire Products.—While in some lines the wire trade fell off slightly, the demand for nails shows up favorably as compared with corresponding periods. It is expected that the latter part of August will see a serious consideration of fall and spring necessities and a substantially increased movement of wire products. The prospect is for a larger than ordinary demand for fence wire. We quote as follows:

Wire nails, $2.13; painted barb wire, $2.28; galvanized barb wire, $2.58; smooth annealed wire, $1.98; smooth galvanized wire, $2.28; polished staples, $2.23; galvanized staples, $2.53. Carload lots to retailers, 5 cents higher; less than carload lots, 15 cents higher.

Coke.—There are no changes to report in the coke market and we quote as follows, prices at the ovens. Connellsville standard grades, furnace coke $1.85 to $2, foundry coke, $2.25.

Old Material.—With only the needs of small consumers of scrap to rely upon for the immediate absorption of very large stocks of old materials now in their yards, the dealers continue to drive prices to higher levels. These prices have no present support based in the actual consumption of scrap, which is extremely meager. The market is in a condition to be influenced by small transactions and small sales are made the basis of bull movements. It is reported that the tonnage of old car wheels on the list of the Chicago, Burlington & Quincy brought $14.65 f. o. b. Chicago and that the car wheels offered by the Illinois Central were not sold on an offer of $14.35. We quote our prices revised as follows, gross tons in the first paragraph.

Old car wheels	$14.50 to 15.00
Old iron rails	15.75 to 16.25
Re-rolling rails (3 ft. and over)	15.50 to 16.00
Old steel rails (3 ft. and under)	13.00 to 13.50
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	13.00 to 13.50
Heavy melting steel	12.50 to 13.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$12.25 to 12.75
No. 2 R. R. wrought	11.25 to 11.75
Knuckles, couplers and springs	12.25 to 12.75
Shafting	15.00 to 15.50
Iron car axles	17.75 to 18.25
Steel car axles	16.50 to 17.00
Dealers' forge No. 1	10.00 to 10.50
Pipes and flues	9.50 to 10.00
No. 1 cast, 150 lbs. and less	12.50 to 12.75
No. 1 mill	7.50 to 8.00
Mixed busheling (Nos. 1 and 2)	7.50 to 8.00
Country sheet	5.00 to 5.50
No. 1 boiler cut	9.00 to 9.50
Boiler punchings	10.50 to 11.00
Cast borings	5.00 to 5.50
Mixed borings, etc	5.00 to 5.50
Machine shop turnings	6.00 to 6.50
Railroad malleable	12.00 to 12.50
Agricultural malleable	11.00 to 11.50
Stove plate and light cast scrap	10.50 to 11.00
Old iron splice bars	15.75 to 16.25

CLEVELAND.

Heavy Contracting for Steel Bars—Cutting of Sheet Prices.

Office of THE IRON TRADE REVIEW,
Browning Building, July 28.

Iron Ore.—The ore market continues extremely dull. Shipments from the mines are still at a slow rate, and considerable ore is being piled on the already crowded docks. Furnaces are so well supplied that direct shipments of ore are limited. It is expected that about 750,000 tons will be delivered at Gary this year. On base ores, with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; and Mesabi non-Bessemer, $3.50.

Pig Iron.—In the immediate Cleveland district, there has been very little buying, but some sales of fair size have been made by Cleveland interests for delivery at Detroit and other distant points. A considerable tonnage has been taken at Detroit by stove interests for deliveries extending over the first half of next year. It was understood that the southern iron, which constituted a considerable percentage of the tonnage contracted for, was sold through brokers on a basis of $11.50 Birmingham or $16 Detroit for No. 2, and some northern manufacturers were compelled to meet this competition, although reluctant to sell for such advanced delivery. We quote as follows:

Bessemer	$16.55 to 16.90
No. 1 foundry	15.75 to 16.25
No. 2 foundry	15.60 to 15.75
No. 3 foundry	15.25 to 15.50
No. 2 southern	15.85 to 16.10
Gray forge	14.50 to 15.00
Lake Superior charcoal	19.50 to 20.00

Coke.—The coke market is very quiet and destitute of special features. We quote on contracts, furnace coke, $1.70 to $1.85, and foundry at $2.25.

Finished Material.—The leading interests have contracted for about 50,000 tons of steel bars during the past 10 days, the principal buyers being bolt manufacturers and agricultural implement interests. The demand for plates and structural material has improved and the situation in general from a mill standpoint is more encouraging. Bar iron is quiet. The Union rolling mill will resume next Monday after being idle for a month. The Empire rolling mill, which has also been idle since early in July, will probably resume a week later, but neither mill is assured that orders will justify operation for more than a short time. In some cases of buyers who have long been in the habit of contracting for annual periods, the limitation of present prices on plates and structural material to Jan. 1 is not being observed. There is considerable cutting on sheets by independent interests and the leading company is losing considerable business. Jobbers report that business shows little, if any, improvement over recent weeks.

Old Material.—No change in prices has occurred during the week and local dealers are holding stiffly to what stock they have in their yards. Indeed, the present has all the earmarks of a dealers' market. Little stock in any quantity is moving; still close prices are being quoted as be-

tween dealers. Several railroad lists will close shortly which may bring about something of a price movement either way. We continue to quote as follows, f. o. b. Cleveland:

Old iron rails	$16.00 to 16.50
Old steel rails (re-rolling)	14.50 to 15.00
Old steel rails (under 6 ft.)	14.00 to 14.50
Old car wheels	14.00 to 14.50
Old steel boiler plate	12.00 to 12.50
Steel axles	18.00 to 18.50
Malleable iron (railroad)	13.00 to 13.50
Malleable iron (agricultural)	11.50 to 12.00
Heavy steel	13.50 to 14.00
Country mixed steel	12.00 to 12.50
Low phosphorus	16.00 to 16.50

We quote, net tons, as follows:

No. 1 R. R. wrought	12.50 to 13.00
No. 1 busheling	11.00 to 12.00
No. 1 machine cast	12.00 to 13.00
Iron axles	17.00 to 18.00
Axle turnings	9.00 to 9.50
Machine shop turnings	6.50 to 7.00
Grate bars	9.00 to 10.00
Pipes and flues	10.00 to 10.50
Tank iron	10.50 to 11.00
Hoop and band iron	7.50 to 8.00
Sheet iron	4.25 to 5.25
Wrought drillings	6.50 to 7.00
Stove plate	10.50 to 11.00
Cast borings	6.00 to 6.50

CINCINNATI.

Purchases at Detroit and Dayton—Some for Next Year Delivery.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., July 28.

Pig Iron.—The matter of special interest in the market this week was the purchase by a Dayton, O., melter of 2,500 tons of malleable, 1,000 tons of gray forge, 1,200 tons of Lake Superior charcoal, and 1,600 tons of old car wheels. The purchases call for deliveries beginning Oct. 1, and extending over six months. It is reported that the malleable sold at about $15.75 Dayton, and the gray forge at $1 less. Another southern Ohio melter bought 1,200 tons of southern iron for third and fourth quarter delivery, on which the price was not made public. A large melter having plants in several cities bought 2,000 tons of southern iron, and a northern Ohio consumer is reported to have taken 1,000 tons of malleable for third and fourth quarter delivery. Several purchases in Detroit involving 8,000 to 10,000 tons of foundry iron, said to be on a basis of about $16 Detroit, and for deliveries extending into the first half of next year, attracted some attention in the trade, as this price is equivalent to $11.50 Birmingham for No. 2 foundry and it is somewhat significant if foundry iron can be bought for next year's delivery on this basis. It is further reported that about 3,000 tons of silvery iron, running from 6 to 8 per cent silicon, sold in the same market at about $18.50, furnace in Jackson county. About the only important inquiries pending are the 2,000 tons from a local consumer and 3,000 tons of special steel-making irons from an Ohio concern. There have been some purchases for investment and more tonnage of this character is under consideration. Prices appear to be easier in a general way. It is difficult to obtain more than $11.50 Birmingham for No. 2 foundry, and it is intimated that $15 furnace in the Ironton district can be shaded to the extent of 25 cents per ton on attractive business. Buyers appear to be indifferent or express belief that lower prices will prevail before the close of the third quarter; and are continuing their policy of deferring order placing. While the business reported would indicate some activity in pig iron, the rank and file of buyers are doing nothing and the small order trade is insignificant in the aggregate. Southern producers appear to be maintaining the market at $11.50 to $12.00 with considerable uniformity, although we hear of one producer having withdrawn the $11.50 quotation, while another has advanced its fourth quarter price to $12.50. We quote for third quarter delivery, delivered Cincinnati, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, as follows:

	PER TON
Southern foundry No. 1	$15.25 to 15.75
Southern foundry No. 2	14.75 to 15.25
Southern foundry No. 3	14.25 to 14.75
Southern foundry No. 3	14.00 to 14.25
Southern No. 1 soft	15.25 to 15.75
Southern No. 2 soft	14.75 to 15.25
Southern gray forge	13.50 to 13.75
Northern No. 1 foundry	16.70 to 17.20
Northern No. 2 foundry	16.20 to 16.70
Northern No. 3 foundry	15.70 to 16.20
Northern 8 per cent silicon	19.70

Finished Material.—The specifications on contracts continue moderate and new mill business is quiet. Jobbers report a fair demand at the stores and are filling small orders at the following prices:

Iron and steel bars, 1.85c to 2c, full extras. Angles, 3 x 3 and over, 2.10c to 2.25c; beams and channels, 15 inches and under, 2.10c to 2.25c; small angles and architectural channels, 2c base; plates, ¼-inch and heavier, 2c; 3/16-inch, 2.10c; No. 8, 2.15c; sheets, blue annealed, No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; box annealed sheets, Nos. 18 and 20, 2.55c to 2.65c; Nos. 22 and 24, 2.65c to 2.75c; Nos. 25 and 26, 2.70c to 2.80c; No. 27, 2.75c to 2.85c; and No. 28, 2.85c to 2.95c; boiler tubes, 2¼ to 5 inches, 62 per cent off base; turnbuckles, 45 per cent off; rivets, 3c base; cold rolled shafting, 47 to 50 per cent off list; steel tire, 2.05c to 2.10c base.

Coke.—Spot coke is in ample supply and weaker, with quotations irregular and within a wide range. A fair number of foundry coke contracts have been placed during the week at unchanged prices. Contract prices in the leading coke producing districts are as follows:

	PER TON
Wise county furnace coke	$1.60 to 1.85
Wise county foundry coke	2.10 to 2.25
Pocahontas furnace coke	1.75 to 1.85
Pocahontas foundry coke	2.00 to 2.25
Standard Connellsville furnace coke	1.85 to 2.00
Standard Connellsville foundry coke	2.25 to 2.40
Connellsville district furnace coke	1.60 to 1.80
Connellsville district foundry coke	2.00 to 2.25

Old Material.—The market continues quiet. A sale of 1,600 tons of old car wheels to a Dayton, O., concern was a feature in this territory. Wheels have been plentiful and easy for some time past. Prices are without quotable change. We quote dealers' prices to melters as follows:

Old No. 1 R. R. wrought, net tons	$11.00 to 12.00
Cast machine and fdy., net tons	12.00 to 12.50
Old iron rails, gross tons	13.50 to 14.00
Old steel rails (re-rolling) gross tons	12.75 to 13.25
Old short lengths, gross tons	12.00 to 12.50
Old iron axles, net tons	15.50 to 16.50
Heavy melting scrap, gross tons	12.00 to 12.50
Stove plate, net tons	9.50 to 10.50
Wrought turnings	5.00 to 6.00
Cast borings, net tons	4.00 to 4.50
Car wheels, gross tons	13.00 to 14.00

NEW YORK.

More Activity in Pig Iron—Cast Iron Pipe Interests Buying.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., July 28.

Pig Iron.—The past week has been featured by two developments—a brisk buying movement by cast iron pipe manufacturers, chiefly in the eastern Pennsylvania district, and a revival of activity among New England consumers, who are furnishing most of the inquiry current in this section. Sales of pipe irons just reported include one lot of 10,000 tons, another of 3,000 tons, and another of 1,000, with sufficient other transactions of this character to round out a considerable tonnage. In basic iron, another sale of 3,000 tons has come to light. Foundry inquiries now pending involve several lots of from 500 to 1,000 tons, partly for northern No. 2 and partly for southern grades. On the latter it is now difficult to shade $12, Birmingham, particularly when delivery is sought through the remainder of the year. A New England melter is also in the market for between 3,000 and 5,000 tons of malleable for the fourth quarter and a small tonnage of Bessemer is to be purchased for immediate consumption. Marked improvement is reported in deliveries, the number of foundries which are calling for shipments steadily increasing. It is evident, also, that the present increase in the volume of buying is legitimate

and contains much less of the speculative element than the flurry of May. There is still considerable selling of coke, but consumers generally have filled their requirements for a considerable time. We quote, tidewater delivery, third quarter:

Northern foundry No. 1	$16.50 to 17.00
No. 2X foundry	16.00 to 16.50
No. 2 plain	15.50 to 16.00
No. 2 southern foundry	16.00 to 16.50
Malleable	17.50 to 18.00
Basic	15.00 to 15.50
Gray forge	15.25 to 15.75

Ferro-Alloys.—A moderate volume of inquiry is current in ferro-manganese, spot metal being somewhat weak but higher prices prevailing for advanced shipment, the range being $44.00 to $46.00, seaboard. Spot is being pressed on the market by a few overloaded jobbing interests. A 100-ton inquiry is current for 50 per cent ferro-silicon.

Finished Materials.—Structural lettings continue few and of relatively small tonnage, the larger propositions apparently being as far from the actual contract stage as ever. The receivers of Milliken Bros., Inc., have secured the order from the New York, New Haven & Hartford for about 1,000 tons of steel to be used in connection with freight transfer bridges at Oak Point. The same interest has contracted to furnish the 650 tons of steel required for a loft building on White street, this city, to be erected by the Harder Realty & Construction Co., and has received orders for a number of galvanized transmission poles. About 250 tons of Bethlehem steel sections will go into buildings for St. Savior's School, Brooklyn.

Bids are going in on an office building at Nassau, Beekman and Ann streets, this city, requiring 3,070 tons of steel, on an apartment house at Broadway and One Hundredth Street, requiring 800 tons, on another section of work for the Pennsylvania Tunnel & Terminal Co., involving 500 tons, and on two or three loft buildings. Bids are to be opened Friday on the steel pipe for the Long Island water supply extensions, for which either 21,000 tons of riveted pipe or 17,000 tons of lock-bar will be needed. Other plate business is apparently increasing. Prices on fabricated material show no improvement.

In cast iron pipe, the largest letting reported is about 5,300 tons of 30-inch for Johnstown, Pa., which will be furnished by the leading interest. Bids are to be opened Wednesday on 4,000 tons of 48-inch for the Metropolitan Water and Sewer Co., Boston. East Brookfield has purchased a small tonnage.

In other lines conditions remain unchanged and we quote: Angles, 3 to 6 inches x ¼-inch and heavier, 1.76c; beams, 3 to 15 inches, 1.76c; tees, 3 x ¼-inch and heavier, 1.81c; plates, carloads, tanks, 1.76c; marine boilers, 2.16c; bar iron, 1.41c; soft steel bars, 1.56c; sheets, No. 28, black, 2.66c.

Old Materials.—Mills continue to hold aloof, purchasing only sufficient tonnages to meet their immediate needs, and dealers are going ahead with their program of accumulating good tonnages in anticipation of a more active market in the early fall. Current transactions are accordingly light, but the situation seems to be gaining strength. We quote gross tons, New York delivery, as follows:

Old iron rails	$14.00 to 14.50
Old steel rails, re-rolling	14.00 to 14.50
Relaying rails	20.00 to 21.00
Old car wheels	12.00 to 12.50
Old iron car axles	17.50 to 18.00
Old steel car axles	16.00 to 16.50
Heavy melting steel	12.00 to 12.50
No. 1 railroad wrought	13.50 to 14.00
Iron track scrap	12.00 to 12.50
Wrought pipe	10.00 to 10.50
Cast borings	6.00 to 6.50
Wrought turnings	7.50 to 8.00
Heavy cast scrap	12.50 to 13.00
Railroad malleable	9.00 to 9.50
Stove plate	9.50 to 10.00
Grate bars	9.50 to 10.00

PHILADELPHIA.

Buying of Pig Iron Limited, but Undertone is Healthy.

Office of THE IRON TRADE REVIEW,
408 Central Trust Bldg., July 28.

Pig Iron.—Sales are of early requirement order and range in size from carload lots to one order for 3,000 tons of gray forge. There is a healthy undertone to the market, however, and furnace men are disposed to be optimistic. Their tendency is to stiffen prices and some of the larger interests are quoting above the figures generally prevailing in some grades. One large interest, which is operating at 15 per cent of its capacity, is taking no more orders for the third quarter, figuring that stocks must be exhausted and not wishing yet to place more stacks in blast. Sentiment is various, some expecting a buying movement similar to that of May in the near future, while others are disposed to expect little change for several months. Third quarter figures show an advance over those given, while the furnace men are very reluctant to quote for delivery next year. Southern iron remains at $12 Birmingham, with a quiet market. We quote as follows:

No. 1X foundry	$17.00 to 17.50
No. 2X foundry	16.50 to 17.00
No. 2 plain	16.00 to 16.50
Standard gray forge	15.25 to 15.50
Basic	15.25 to 15.50
Low phosphorus	21.00 to 21.50
No. 2 Birmingham	15.75 to 16.25
No. 2 Virginia	16.75 to 17.00

Finished Material.—The run of orders is small, though there is some good business in prospect. The principal activity is in iron bars and plates. Several rail orders are pending. Prices are as follows: Structural, 1.75c to 1.90c, according to specifications; steel plates, 1.75c to 1.80c; refined iron, 1.30c to 1.35c; steel bars, 1.50c to 1.55c.

Old Material.—With their increase of business, the steel companies are beginning to take a more active interest in the scrap market. The Pennsylvania, Reading and Jersey Central have good tonnages of old rails to sell, but are holding for better prices. We have marked up the prices on wrought iron pipe and heavy axle turnings and quote as follows:

Old steel rails	15.00 to 15.50
No. 1 steel scrap	14.00 to 14.50
Old steel axles	18.50 to 19.00
Old iron axles	21.00 to 21.50
Old iron rails	18.25 to 18.75
Old car wheels	14.50 to 15.00
Choice scrap R. R. No. 1 wrought	16.25 to 16.75
No. 1 yard scrap	14.50 to 15.00
Machinery scrap	14.50 to 15.00
Low phosphorus scrap	18.50 to 19.00
Wrought iron pipe	13.50 to 14.00
No. 1 forge fire scrap	12.00 to 12.50
No. 2 forge fire scrap, ordinary	9.00 to 10.00
Wrought turnings	10.50 to 11.00
Axle turnings, heavy	12.00 to 12.50
Cast borings	9.25 to 9.75
Stove plates	11.00 to 11.50

BUFFALO.

More Inquiry for Pig Iron—Finished Lines Quiet.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, July 28.

Pig Iron.—More activity is shown among consumers so far as inquiries are concerned but sales have not materially increased. Furnace men say the outlook is good and much better than for several weeks. They are not selling at indifferent prices, and a number of buyers found their offers for tonnage this week did not interest the furnace men. On the other hand, we note the sale of nearly 4,000 tons at Syracuse through a Buffalo agency. We quote, f. o. b. Buffalo:

No. IX foundry	$16.00 to 16.50
No. 2X foundry	15.50 to 16.00
No. 2 plain	15.00 to 15.50
No. 3 foundry	15.00 to 15.50
Malleable Bessemer	16.00 to 17.30
Gray forge	14.75 to 15.25
Charcoal	20.25 to 20.75

Finished Materials.—The past week's market has been inactive in this territory, sales of large tonnage being few, but the outlook is promising and some figuring on important contracts is going on.

ST. LOUIS.

More Inquiry for Pig Iron—Numerous Orders Placed.

July 27.

Pig Iron.—Today's mail brought in more inquiries from the St. Louis ter-

ritory than have been received for two weeks previous, also a plentiful supply of orders on a base price of $12 for No. 2, Birmingham. There is some talk of an $11.50 price, but none of the St. Louis furnace men will vouch for it. In fact, the prevailing price here is from $12 to $12.50, Birmingham, both for immediate and future shipments, with the market evincing a slightly firmer tone and indications that a small buying movement has started. There is more general demand for pig iron than has been experienced for the last 60 days.

None of the furnaces is very anxious for orders for shipment in July and August, most of them asserting that their order books are well filled, with no stock accumulating on yards. Inquiries are out aggregating about 2,500 or 3,000 tons of various grades and deliveries. No prices are made for shipment in 1909. Our prices delivered, to which the freight from Birmingham has been added, follow:

No. 1 southern	$16.25 to 16.75
No. 2 southern	15.75 to 16.25
No. 3 southern	15.25 to 15.75
No. 4 southern	14.75 to 15.25

Coke.—The coke market is firm with prices ranging from $2.15 to $2.50 for best selected Connellsville 72-hour foundry grades, ovens, the lower price for immediate shipment and the higher on contract for future delivery. The best selected 48-hour Connellsville furnace coke is quoted at $1.60 to $2, ovens, with some high-sulphur 48-hour furnace as low as $1.45. Virginia and West Virginia 72-hour foundry grade is offered at $2.25 to $2.50, ovens, for all deliveries.

Finished Material.—New building seems to be at a standstill, the only work of importance being the contemplated municipal building, to cost about $2,000,000, for which plans have been partially drawn.

Old Material.—Our quotations remain as follows:

Cast iron borings, free from foreign material, net ton	$ 4.50
Steel axle turnings, net ton	8.00
Steel railroad axles, net ton	13.50 to 14.00
Iron railroad axles, net ton	15.50
Miscellaneous steel scrap, gross ton	9.75
Old car wheels, gross ton	14.00 to 14.50
No. 1 railroad cast scrap, net ton	10.50
Heavy machinery cast, net ton	11.50
Stove plate and light cast, net ton	9.00
Sheet iron, net ton, uncut	3.00
No. 1 railroad wrought, net ton	10.00 to 10.50
Railroad malleable, net ton	11.00
Heavy melting steel, net ton	10.00

J. M. McBurnett, of Anniston, Ala., and Herbert Savage, of Cincinnati, have purchased 2,000 acres of iron ore land near Piedmont, Ala.

BIRMINGHAM, ALA.

Strike of Coal Miners Still Delays Starting of Furnaces.

July 27.

The pig iron production in Alabama holds up well despite the fact that the strike of the union coal miners is still on and that the output of both coal and coke is at its minimum. There is a little demand for iron and some orders are being booked, delivery during the last quarter of the year. The quotations are showing a little better strength. There have been some sales made recently at $11.50 per ton, No. 2 foundry, but $12 per ton appears to be a more general quotation, with $12.50 being stated by some of the larger companies. The shipments of pig iron now and what is being consumed in the home territory equal the production. Two furnaces are in readiness in this district at present for operation when everything is in proper shape for such a move. Two other furnaces will also shortly be in readiness for the torch. The strike situation has something to do with the delay in starting up the furnaces. A number of new men are being brought into the Birmingham district to take up the work in the coal mines and the military are still here for protection to life and property. The output at mines will begin taking on some shape.

The home consumption of pig iron is mainly at the cast iron and soil pipe plants. There is a better trade being experienced at the foundries and machine shops. A prominent proprietor of a big shop is authority for the statement that recently some nice orders had been received from the north and east and inquiries were coming in for more work. While the forces at work in the plants are not more than one-fourth the regular number of men, additions are to be made from time to time.

BRITISH IRON MARKET.

Pig Iron is Weaker and Furnaces Are Being Blown Out.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., July 18.

The pig iron market shows a decided increase in weakness this week. Cleveland warrants have fallen from 51s 4d ($12.56) to 50s 5½d ($12.35), and there is a slight increase in stocks, which now stand at 53,166 tons. The mystery of the strength of the Cleveland market throughout the depression is said to be explained by the fact that a very long contract has been operated with Germany, which is now approaching completion. The effect of this is that there is twice the amount of Cleveland pig iron in Germany that there is in America. The effect will be seen when this finally terminates. Scotch smelters are about to damp down 18 blast furnaces, which will reduce the number to 60, as compared with 91 a year ago, and reduce production by 14,000 tons a week. In the Black Country the buyer has practical control of the market, but smelters are preferring to stock their iron rather than sell at a loss, holding a strong belief that the metal will be wanted before the end of the year. Generally speaking, selling rates have fallen by about 1 shilling on the week, making the selling price for Northampton 43s ($10.52) to 44s ($10.76). An interesting event this week is the production of a quantity of hematite by a Darlaston blast furnace. Of course, for this, Spanish ore has had to be imported, and some slight modification will be effected in the raw material. But the great fact demonstrated is that hematite can undoubtedly be produced from the local ore. On the East Coast, prices for mixed numbers are 56s 6d ($13.82) representing a slight decrease, and on the West Coast 59s ($14.44).

An important step has been taken by the Midland Iron and Steel Wages Board in the settlement of the wages question. On this subject dissatisfaction has prevailed for months past, the operatives complaining that their wages should be 6d higher to give them the correct relation with the North. They have now decided to raise the premium from 2s to 2s 3d, and the new rate is to take effect in October. This is in the nature of a compromise, but the men are satisfied, and the Wages Board will sanction the arrangement when a full meeting is called, as it will be shortly.

METAL MARKET

CHICAGO.

July 28.

The metal business of the past week shows a very noticeable improvement both in the number and volume of orders. Copper, lead and tin advanced in price and buying is for a little more extended delivery. We have changed our prices and quote as follows:

Lake copper, 13¾c to 14c; casting, 13½c to 13¾c; pig tin, 33c to 33½c; spelter, 4.85c to 5.00; pig lead, desilverized, 4.60c to 4.75c in 50-ton lots; corroding, 4.75c to 4.85c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 7c list, f. o. b. LaSalle, in car lots of 600-pound casks; Cookson's antimony, 11c to 11½c;

other grades, 10c to 10¼c.

Prices of old metals are generally improved with fractional advances. Tin enjoyed a pronounced rise and copper and brass were also affected. We have revised prices and quote to dealers as follows:

Copper wire, 11¼c; heavy copper, 11¼c; light copper, 10½c; heavy red brass, 10½c; heavy yellow brass, 8⅜c; light brass, 5¾c; No. 1 red brass borings, 8¼c; No. 1 yellow brass borings, 7½c; brass clippings, 8¼c; tea lead, 3½c; lead scrap, 3¾c; zinc, 3c; tin pipe, 23c; tin foil, 19c; pewter, 16c; electrotype plates, free from wood, 4⅛c; electrotype dross, 2¾c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc, $55 per ton.

NEW YORK.

July 28.

Copper.—A substantial improvement in demand for copper for home consumption, with brisk purchasing for early delivery, has given the market a decidely firmer tone and has resulted in a sharp advance in prices. Several of the largest consumers are in the market for fair quantities and selling interests are holding at higher figures, with predictions of still further increases. We quote: Lake, 13⅛c to 13¼c; electrolytic, 13c to 13⅛c; casting, 12⅝c to 12¾c.

Pig Tin.—Following the lead of the foreign market, the domestic situation is more active and prices are tending upward. Consumers are still purchasing only for early requirements, however, and there is a premium for spot shipment. For August delivery business is being done locally at from 30c to 30.25c.

Pig Lead.—Prices have advanced sharply in line with the recovery on the London market and current sales in this district are being made at 4.47½c to 4.50c, New York.

Spelter.—Improved demand from galvanizers has caused a slight advance, and sales are now being made in limited quantities at 4.50c to 4.55c, New York.

Antimony.—There is no change and we quote: Cookson's, 8½c; Hallett's, 8⅜c; ordinary brands, 8c to 8¼c.

ST. LOUIS.

July 27.

Lead and Zinc.—The highest price paid for zinc ore in the Joplin district last week was $37.50 a ton, with the average price fluctuating from $33 to $34 a ton for 60 per cent ores. A combination of the operators in the Webb City district held the price up to $34 until that figure was obtained. Early sales of lead ores were made at $58 a ton on a level, but prices were steady at $59 and $60 a ton at the close of the week. The advance in the metal markets was coincident with the slight decline in ore prices.

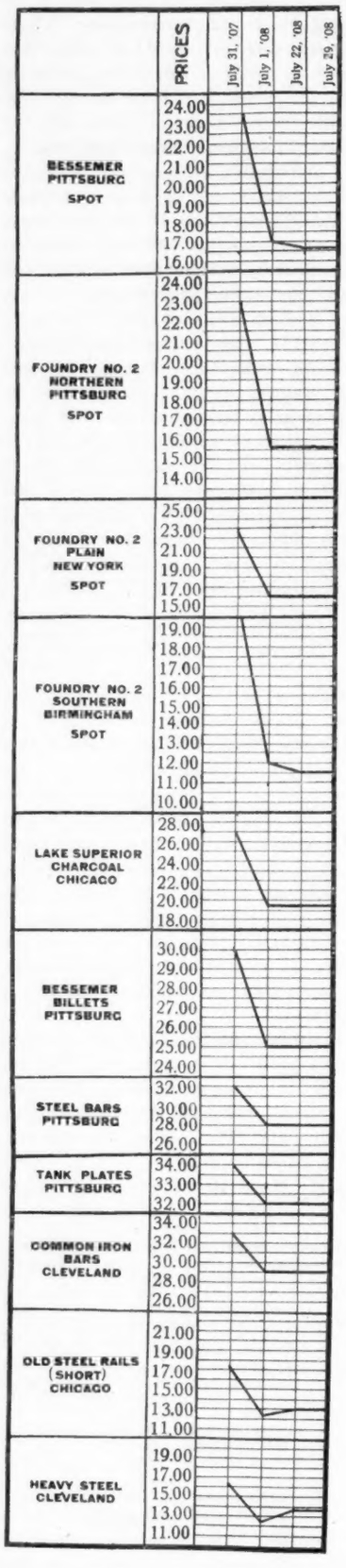
The American and Quebec Mining & Quarrying Co. of Boston, Mass., is said to be acquiring quite a number of the big producing mines of the district for the purpose of forming the largest zinc and lead merger made in years. The company, which is one of the largest producers of various metals in the United States, has made application for enlistment on the Joplin stock exchange, and a representative of the concern, who was recently in Joplin, is expected to return within a few days with prominent members of the company.

Southern Steel Reorganization.—The reorganization committee of the Southern Steel Co. has issued the following: "In looking to the reorganization of the Southern Steel Co. as provided by the plan of reorganization for said company and which plan has now been assented to by practically all the bondholders, collateral trust note holders and creditors, the committee announces that financial arrangements have been made to do so. The committee has paid up the overdue interest and sinking fund on the mortgages of the Georgia Steel Co., the Lacy-Buck Iron Co. and the Chattanooga Iron & Coal Co. This prevents the disintegration of these properties by foreclosure suits and assures to the new company the ownership of these valuable properties, consisting among other things of 35,000 acres of ore lands and rights and 37,000 acres of coal lands and rights, as well as modern and up-to-date iron and steel works."

Webster Discharged.—J. H. Webster, president of the Variety Iron & Steel Works Co., Cleveland, who was arrested a few days ago on a charge of refusing to answer questions in state reports, was discharged by the justice of the peace July 27. Another warrant has been issued for Mr. Webster at the instance of the state agent who caused the original arrest and upon a similar charge.

The Martins Ferry, O., stack of the Wheeling Steel & Iron Co., which has been relined, was blown in July 15.

PRICE CHART.



HEAVY DECREASE

In Pig Iron Production During First Half of the Year.

The American Iron and Steel Association has received from the manufacturers complete statistics of the production of pig iron in the United States in the first half of 1908. Detailed statistics will be found printed herewith.

Total Production.—The production of pig iron in the first half of 1908 was 6,918,004 gross tons, against 12,303,317 tons in the last half of 1907, and 13,478,044 tons in the first half of 1907. The production of pig iron in the first half of 1908 was a little over 51.3 per cent of the production in the first half of 1907, during which latter period the iron trade was not affected by panic conditions. The following table gives the half-yearly production since 1905:

	Gross Tons		
	First half.	Second half.	Total.
1905....	11,163,175	11,829,205	22,992,380
1906....	12,582,250	12,724,941	25,307,191
1907....	13,478,044	12,303,317	25,781,361
1908....	6,918,004	.....	.....

The decrease in production in the first half of 1908 as compared with the second half of 1907 amounted to 5,385,313 tons, and as compared with the first half of 1907 to 6,560,040 tons. The production in the first half of 1908 was the smallest in any half year since the last half of 1900, when 6,146,673 tons were made.

The following table gives the production of pig iron in the United States in half-yearly periods from 1900 to 1907 in gross tons:

Years.	First half.	Second half.	Total.	Increase or decrease.
1900.....	7,642,569	6,146,673	13,789,242	*1,495,896
1901.....	7,674,613	8,203,741	15,878,354	†529,128
1902.....	8,808,574	9,012,733	17,821,307	†204,159
1903.....	9,707,367	8,301,885	18,009,252	*1,405,482
1904.....	8,173,438	8,323,595	16,497,033	†150,157
1905.....	11,163,175	11,829,205	22,992,380	†666,030
1906.....	12,582,250	12,724,941	25,307,191	†142,691
1907.....	13,478,044	12,303,317	25,781,361	*1,174,727

†Increase. *Decrease.

Classified Production.—The production of Bessemer and low-phosphorus pig iron in the first half of 1908 was 3,388,491 tons, against 6,045,742 tons in the last half of 1907, and 7,185,878 tons in the first half. The production in the first half of 1908 includes 61,825 tons of low-phosphorus pig iron, against 109,068 tons in the last half of 1907.

The production of basic pig iron in the first half of 1908 was 1,481,612 tons, against 2,704,083 tons in the last half of 1907 and 2,671,136 tons in the first half. Basic pig iron made with charcoal is not included.

The production of charcoal pig iron in the first half of 1908 was 129,720 tons, against 231,601 tons in the last half of 1907 and 205,796 tons in the first half. The figures for the first half of 1908 and for the second half of 1907 include a few tons made with charcoal and electricity.

The production of spiegeleisen and ferro-manganese in the first half of 1908 was 85,493 tons, against 166,673 tons in the last half of 1907 and 172,675 tons in the first half. The production of spiegeleisen alone in the first half of 1908 was 67,021 tons. Of ferro-manganese alone the production in the first half of 1908 was 18,472 tons.

Production by Fuels.—The production of bituminous coal and coke pig iron in the first six months of 1908 amounted to 6,547,439 tons, as compared with 11,458,396 tons in the last half of 1907; the production of anthracite and coke mixed was 239,151 tons, as compared with 595,981 tons in the last half of 1907; of anthracite alone the production was 1,694 tons, as compared with 17,339 tons in the last half of 1907; charcoal is given above.

Furnaces in Blast.—The whole number of furnaces in blast on June 30, 1908, was 168, against 167 on Dec. 31, 1907, and 359 on June 30, 1907. The number of furnaces idle on June 30, 1908, was 283, against 276 on Dec. 31, 1907, and 83 on June 30, 1907.

During the first six months of 1908 the number of furnaces actually in blast during a part of the whole the period was 250, as compared with 388 during the last half of 1907 and 382 during the first half of that year.

Building Furnaces.—On June 30, 1908, there were 24 furnaces in course of construction, of which 23 will use mineral fuel and one will use charcoal, as follows: New York, 2; Pennsylvania, 6; Ohio, 6; Indiana, 8; Illinois, 1; and Michigan, 1.

Rebuilding Furnaces.—On June 30, 1908, there were 17 furnaces being rebuilt, all mineral fuel, as follows: New Jersey, 1; Pennsylvania, 11; Alabama, 1; Ohio, 2; and Illinois, 2.

No. 2 stack of the National Tube Co.'s furnaces at Lorain, O., which is being rebuilt, will have been placed in shape to blow in about Aug. 15. If the stack is blown in on that date, it will be the fourth of the Lorain stacks now in operation.

CINCINNATI METAL TRADES ASSOCIATION OUTING.

The Cincinnati branch of the National Metal Trades Association gave its third annual outing to the employes in the shops of its members at Chester Park on July 25. About 35,000 people were the guests of the association for the day. The employers were also present and had a dinner in the evening at the club house. This feature of the work of the Cincinnati branch has been considered of great importance and, as this is the third outing, it has passed the experimental stage and has become a feature of the association work.

A number of athletic events were planned. Employes from the different shops were selected to participate in these contests and prizes were distributed to the winners. At the dinner of the employers in the evening the entertainment committee was complimented on the arrangement of details and special praise was given to Secretary John Manley for his very efficient work in assisting the committee.

It was the general opinion that these outings tend to promote a better feeling between the employe and the employer and that the employe appreciated the efforts made to give a day of pleasure to himself and his family. Tickets of admission were furnished to all of the employes and their families who had been laid off during the dull period, as well as to those still employed.

New Coke Ovens. — Preliminary work upon the two new coke plants of the H. C. Frick Coke Co. has been begun at the point of building near Gates, in the lower Connellsville region. The new plants are to be known as Sarah and Palmer, and will consist of 500 ovens and 300 ovens, respectively. The Frick company at the present time is expending a large amount in new plant construction in the Connellsville region. Work has been instituted upon the Filbert plant in the center of the Klondyke regions which will consist of 700 ovens, and preliminary activity is under way at the new plant at Dearthtown. Nothing is being done on the proposed two plants near Lambert and Merrittstown as far as actual construction is concerned.

The Rome, Ga., stack of the Rome Furnace Co., recently leased, has been repaired and will probably be blown in about Aug. 1.

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SQUARE DEAL FIRST—HIGHER RATES MAY FOLLOW.

The proposition made some time ago to promote prosperity by advancing railroad freight rates came as a decided innovation and has aroused much discussion. Startling as the plan was, however, much has been said in favor of it, and all fair minded men will admit that the condition of the railroads, as to receipts and expenditures, is deplorable. It is, of course, admitted that wages of employees have been advanced in recent years, and that this advance is no more than necessary to meet the greater cost of living, and no one wishes to see the wages reduced. It is estimated that increases in pay of railroad employees, effective during the early months of 1907, approximated $100,000,000 per annum. It may also be freely granted that the cost of many supplies used by the railroads has increased, although some of the statements made by railroad officials are misleading. For instance, senior Vice President Brown of the New York Central Lines, in a letter to the Manufacturers' Association of New York, compares the selling prices of certain iron and steel products used by the railroads in 1898 and early in 1908, to show the much greater outlay necessary for equipment. Mr. Brown very adroitly selects the year 1898, when prices of iron and steel products were lower than they had been for several years preceding. Had he taken 1895, 1896 or 1897, the advance compared with 1908 would not have been nearly so great, but for the sake of the argument it may be conceded that the prices of supplies are considerably higher and also that state and national regulations have necessitated additional outlay on the part of the companies.

Certainly no one in the iron business, whose prosperity depends to a large extent on that of the railroads, favors any policy that is unfair to them. It is, nevertheless, true, that there is a widespread feeling among all business men that many railroads have resorted to reprehensible practices, and do not come before the people with clean hands when they plead to be permitted to increase freight rates. If the railroads had been as frank in their financial statements, and as honest in their methods as the great steel and iron companies, and had not indulged in outside speculations or other questionable practices, there would be little hesitation today in agreeing to higher freight rates. Some railroads have been honestly conducted and some rates ought to be increased, especially those relating to freight which must be shipped by fast lines in almost as short time as passenger train schedule, but we do not believe that all railroads are entitled to like consideration, or that there is any justification for a general and sweeping advance in freight charges. Let there be the most searching investigation to determine what the actual facts are in every case, and then all fair minded Americans will cheerfully acquiesce in the result. When the public becomes convinced that higher charges are necessary to meet legitimate expenses and that there will be no buying of securities of other railroads, or other questionable use of funds, there will be no opposition to reasonable advances in rates.

THE DECREASED IRON CONTENT IN ORE.

One of the interesting bits of statistical information gathered annually by the American Iron and Steel Association is the quantity of limestone used in making pig iron. The total thus ascertained is, of course, not indicative of practice under given conditions, but the figures are instructive nevertheless. They give further confirmation to the statement that the average iron content of the ores being smelted is decreasing. The statistics gathered separate coke and anthracite pig iron from charcoal pig iron, a necessary distinction, since the amount of limestone used in making charcoal pig iron is very small. The quantity of limestone per ton of pig iron consumed in making coke and anthracite pig iron has been as follows, there being no statistics gathered for the year 1899:

Limestone Per Ton of Pig Iron, Pounds.

	Pounds.
1897	1,002.3
1898	1,020.4
1900	1,222.9
1901	1,202.7
1902	1,207.7
1903	1,207.3
1904	1,128.0
1905	1,144.1
1906	1,192.8
1907	1,247.8

The year 1897 marked the low point in prices in the history of the American iron trade. Only the richest ores were mined, because only the best could find a market. Only the most favorably positioned furnaces, as to methods of operation and availability of the best raw materials, could operate. The result was a very low average of limestone consumption. The average of a thousand pounds of limestone per ton of pig iron shown in 1897 was not the average of the country. The furnaces tributary to Lake Superior ores used less, and the southern furnaces more. The production by the southern furnaces pulled up the average. In 1907 the consumption had risen to nearly 1,250 pounds, but the proportion of the country's total pig iron which was made in the south had decreased. The southern furnaces therefore pulled up the average less in 1907 than they did in 1897, yet that average increased by one-fourth. It is evident that the limestone consumed by furnaces tributary to Lake Superior ores increased by considerably more than this. A small portion of the increase may be due to the use

of coke carrying more ash, but the great bulk of the increase is due to the lower iron content in the Lake Superior ores, leaving more material which must be fluxed away. Furnace practice has improved so that, if anything, the limestone consumption should be reduced.

A scrutiny of the published analyses of Lake Superior ores shows directly a decrease in the average iron content of the ores listed. For the season of 1898, giving chiefly the average cargo analyses shown in 1897, there were 36 ores listed from the Mesabi range. These ores showed an average iron content, natural state, of 56.36 per cent. The present analysis book lists 74 ores from the Mesabi range, and their average iron content, in the natural state, is 51.73 per cent, showing a decrease of 4.63 units in 10 years.

It cannot be pretended, of course, that a comparison of this sort shows with any exactness the average iron content of the entire production of the Mesabi range. It does not do this for several reasons, one being that some of the choicest ores are not listed, having passed to the control of steel interests which use them exclusively themselves, while another is that very different tonnages are produced of different ores, showing, possibly, widely different analyses, but these differences are likely to average up fairly well, while the exclusion from the presentation of the ores used by large steel producers really makes the showing of more value to the student who wishes merely to study ore conditions for the light they may throw on the pig iron market. The merchant pig iron is made from these ores, the analyses of which are published, and not from the ores which are mined by steel producers. It has no bearing on the merchant pig iron market that the excluded ores are especially rich and conducive to low cost of pig iron production.

A decrease of some four or five units in the average content of Lake Superior ores used in making merchant pig iron means a large increase in limestone consumption, which the statistics just given indicate has occurred, but more important than that it necessitates a large increase in the quantity of coke used. This is a physical, not a commercial, condition, and makes it impossible that the low furnace costs of 1897 can ever be duplicated.

It is interesting to note, in connection with the new penalty system in selling Lake Superior ores, that of the 74 ores listed from the Mesabi range, 57 show an iron content, in the natural state, above 50 per cent, 17 showing a lower iron content. It is at 50 per cent that the new penalty system draws its line of demarkation; above 50 per cent the former penalty system rules; below 50 per cent the concession just given is effective.

The Hill Clutch Co., Cleveland, recently received an order from one of the subsidiary companies of the United States Steel Corp'n. for 59 friction clutch pulleys. All of these pulleys are to be of one size and fitted with the new 1908 positive action Hill clutch, which was chosen by the purchaser after a competitive test was made upon a number of the various makes of clutches.

SLIGHT INCREASE

In Corporation Earnings Compared With First Quarter.

New York, July 28.—The United States Steel corporation has declared the regular quarterly dividend of 1¾ per cent on its preferred and half of 1 per cent on its common stock.

The United States Steel corporation reports for the quarter ended June 30 last earnings of $20,265,756, as compared with $18,229,005 for the quarter ended March 31 last, and $45,503,705 for the corresponding quarter a year ago. The surplus for the June quarter, after all charges and dividends on both stocks, was $195,595, contrasted with $7,865 for the quarter ended March 31 last and $3,497,080 in the corresponding quarter a year ago. The unfilled orders on the books of the corporation on June 30 were 3,313,876 tons, against 3,765,343 tons on March 31, and 7,603,878 tons for June quarter, 1907. Accompanying the statement of earnings the corporation gave out the following:

"The average daily bookings for the first 24 days of July was in excess of 26,000 tons a day, equivalent to 72 per cent of full capacity. This tonnage is well distributed, being composed of all grades of finished steel with the single exception of rails, of which up to the 24th inst. there has been no material increase in sales."

Statement of Earnings.

The statement of earnings is as follows:

April, 1908	$6,761,680	
May, 1908	6,021,279	
June, 1908	7,482,797	
Total earnings after deducting all expenses incident to operations, including those for ordinary repairs and maintenance of plants, and interest on bonds and fixed charges of the subsidiary companies		$20,265,756
Less charges and appropriations for the following purposes, viz:		
Sinking funds on bonds of subsidiary companies	$ 611,605	
Depreciation and reserve funds	3,300,161	
		3,911,766
Net earnings		$16,353,990
Deduct:		
Interest for the quarter on U. S. Steel Corporation bonds outstanding	$5,972,498	
Sinking funds for the quarter on U. S. Steel Corporation bonds, viz.:		
Installments	$1,012,500	
Interest on bonds in sinking funds	326,965	
	1,339,465	
		7,311,963
Balance		$ 9,042,027
Dividends for the quarter on stocks of the United States Steel Corporation, viz.:		
Preferred, 1¾ per cent	$6,304,919	
Common, ½ per cent	2,541,513	
		8,846,432
Surplus for the quarter		$ 195,595

W. J. FILBERT, *Comptroller.*

Work of relining the Belmont stack of the Wheeling Steel & Iron Co., Wheeling, W. Va., is nearing completion. No date has been fixed for resumption, but it is believed that the stack will be blown in early in August.

Tod stack of the Youngstown Steel Co., Youngstown, O., has been blown out.

The Vandalia car shops department at Terre Haute, Ind., employing 1,000 men, has resumed operating on full time, and the shops at Effingham, Ill., closed for the past 10 years, have been re-opened.

Operating was resumed at the West Allis, Wis., plant of the Fred M. Prescott Steam Pump Co. July 16.

GARY RECEIVES FIRST CARGO OF ORE

First Raw Material for the Wonderful Plant Delivered by the Steamer Gary—An Enthusiastic Welcome-—Addresses by Prominent Men.

On Thursday afternoon, July 23, the steamer E. H. Gary, carrying 10,328 tons of Mesabi non-Bessemer ore, entered the port of Gary with the first cargo to be received there, and with the first raw material for the wonderful new plant being built by the Indiana Steel Co. The event was very fittingly made the occasion of a splendid celebration, and with the christening of the port of Gary, the raising of a gallant flag of Stars and Stripes and the firing of a salute of 21 guns by the United States gunboat Wolverine, one more was added to the list of ore receiving ports on the great lakes. At 3:30 P. M., the first bucket of ore was lifted out of the hatches by the newly designed Hulett plant and dropped onto the concrete dock of the steel plant.

The steamer Gary, arriving at the lower end of Lake Michigan on Wednesday, put in at South Chicago, where at noon on Thursday 500 invited guests boarded her for the trip to Gary. From South Chicago the ore boat, larger by far than any of its consorts, was convoyed by the United States steamers Wolverine, Dorothea, Tuscarora and Sumac. On board a buffet lunch was served and made the more pleasant by music from the Marine Reserves band. Just as the Gary poked her nose into the harbor, also named in honor of Judge E. H. Gary, the daughter of Supt. W. P. Gleason of the Gary plant, hauled the Stars and Stripes to the mast head at the end of the pier and the Wolverine broke out in a full salute, accompanied by the smaller guns of the other boats and the shrieks from whistles of every description in the harbor.

The boat made the harbor through the new channel and into the slip without assistance, but a tug is required in rounding the two jetties that are built out into the channel. A tremendous crowd of employes of the steel plant and townspeople lined the slip and when the freighter reached her moorings under the unloading towers, many climbed on board where already the speaking had commenced from the bridge of the steamer. The event was honored by the presence of John W. Kern, Democratic nominee for vice president, who spoke briefly and without reference to politics. He was followed by Congressman Mann of Illinois, State Senator Bowser of Illinois, and Congressman Crumpacker of Indiana.

In a few remarks, Supt. Gleason welcomed the visitors to the plant and, following the ceremony of unloading the first bucketful of ore onto the dock, they proceeded through the various buildings on a brief trip of inspection, coming out at Broadway, the main street of Gary. Here a parade was formed and, marching up Broadway, the company was brought to the Gary hotel, where a reception concluded the program. The celebration was undertaken and managed by the Gary Commercial Club, with the co-operation of the Indiana Steel Co.

The well planned gala day was not more than a fitting recognition of the wonderful work that has been done in the midst of the Indiana sand dunes. Marking the first step of transition for the new plant from the construction stage to the operating stage, the celebration brought out many circumstances of interest. On the one hand one sees this steel plant offering a tremendous capacity for output and on the other finds a market that will not absorb in its present condition the output of existing mills. A more splendid example of confidence in the future could scarcely be found. And in the same thought one notes the opportuneness with which this plant enters into the inactivity of trade when lake vessels are more plentiful by far than cargoes and, with its requirements, provides work and tonnage for a larger vessel capacity than any other single plant in the world. It is also notable that the ore brought to this plant is the first shipment of a tonnage that is to be wholly non-Bessemer and in this fact and the tonnage involved there is, to those who watch the steps of progress, an interesting corollary to this development here of an entirely open-hearth steel plant.

One of the accompanying illustrations is the first published view of the four completed stacks at the Gary plant. These are ready for charging and the torch whenever required. The concrete ore docks are impressive for the storage capacity they offer. They are built with a flooring of 18 inches of concrete laid on the hollowed out sand. In two parallel avenues separated by a concrete wall, they will extend the entire length of the furnaces and are spanned over their combined width of 100 feet by five bridges, each bridge serving an unloading tower. These towers are Hulett machines of an improved design, in which the entire rigid column which carries the bucket descends into the hold. The

PARADE ON STREETS OF GARY.

ORE CARRIER, E. H. GARY, ENTERING HARBOR.

walls of the slip are all concrete and together with the first wall of the ore dock are built on piling driven deep into the sand. Construction work at Gary is progressing at full speed and the second battery of blast furnaces is now in process of erection.

SHELBY TUBE CO.

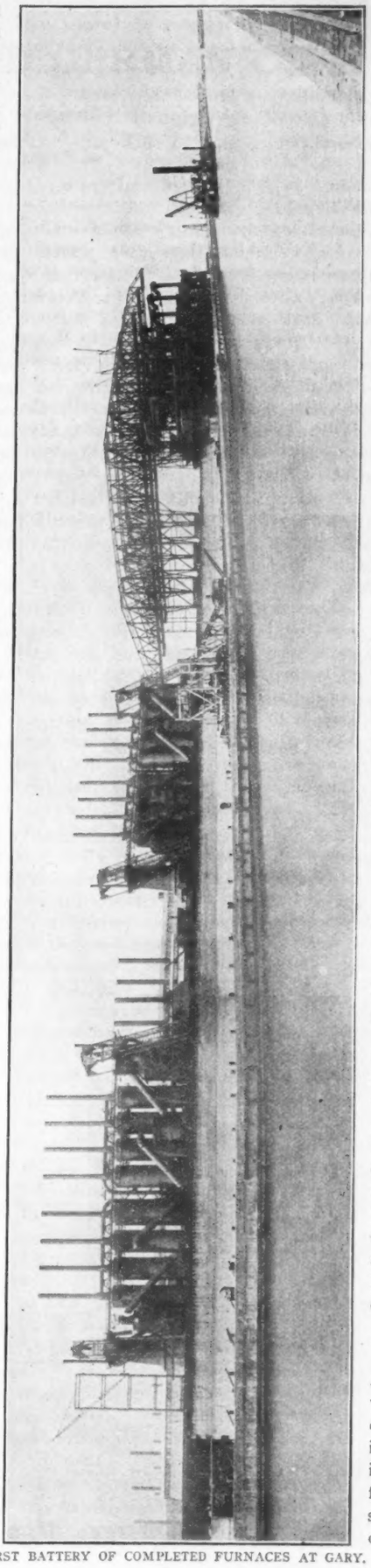
Stockholders Organize and Plan to Break Ground Shortly.

The formal organization of the new Shelby Tube Co. was effected by the 500 stockholders at their first meeting in Shelby, O., July 25, when the following board of directors was chosen: J. C. Fish, Charles Hook, G. M. Skiles, A. C. Morse, J. A. Seltzer, Roger Heath, Edwin Manfield, H. W. Hildebrant, T. J. Green, Jonas Feighner, V. O. Peters, Robert Greer, J. W. Williams, R. P. Bricker and C. S. Moore. The directors organized by electing these officers: President, J. C. Fish; first vice president, G. M. Skiles; second vice president, C. S. Hook; general manager, A. C. Moore; secretary, Howard Seltzer; and treasurer, James Brubaker.

The company has been incorporated with $500,000 capital stock under the laws of Ohio. The total stock subscriptions received so far total $250,000. Announcement is made that ground will be broken shortly.

New Contracts Taken.—The Mesta Machine Co., Pittsburg, recently sold a simple Corliss engine of 500 kilowatts capacity to the Pittsburg-Buffalo Co., and also two Helander barometric condensers, one of 3,500-horsepower capacity, to the American Sheet & Tin Plate Co., and another of 3,000-horsepower capacity for the Struthers plant of the Youngstown Sheet & Tube Co. This is the third condenser of the type ordered by the Youngstown company. Shipment also has been made to the Central Iron & Coal Co. of a cast steel No. 6 lever shear. A similar shear of the next larger size recently was ordered by the Indiana Steel Co. This shear will also be entirely built of cast steel and require 150-horsepower motor for driving. One of four long crosshead blowing engines built for the Cleveland Furnace Co. has been shipped and the other three are nearing completion.

Common stockholders of the American Iron & Steel Co. have been overruled in their contention that they should share in the company's earnings after a dividend of 5 per cent had been paid on the preferred stock.



FIRST BATTERY OF COMPLETED FURNACES AT GARY.

BUILDING NEW STEEL CASTING PLANT IN DELAWARE.

The Deemer Steel Casting Co., New Castle, Del., whose incorporation was noted several weeks ago, has let the contract for the erection of its buildings to the McClintic-Marshall Construction Co., and expects to have the plant ready to operate by April, 1909. The contract with the construction company calls for the erecting of the plant from the breaking of the ground to the finishing of the roof. The main foundry building will be 107 x 346 feet. Other buildings will include pattern storage house, pattern shops, engine and boiler room, office, etc.

The company, which is incorporated under Delaware laws with a capital stock of $250,000, all common stock, will operate under Deemer improved Bessemer open-hearth patents. The company also plans to install plants in different parts of the country. It will make steel castings from one pound up to 15,000 pounds. Its specialty will be steel car wheels with soft steel centers and hard steel tires made in one piece. Selden S. Deemer, the projector of the company, has been in the steel casting business for over 30 years. He was with the Chester Steel Casting Co. from 1876 to 1895 and with the Brylgon Steel Casting co. from the inception of the company until the last of April, 1908, when his contract expired.

A Receiver Appointed.—Upon the petition of Frederick Bullinger, July 27, at Cleveland, W. J. Patterson was appointed receiver of the Imperial Steel Co. with a rolling mill at Chagrin Falls, O. Mr. Bullinger was vice president of the Imperial Steel Co. and seeks in his petition an accounting from and the dissolution of the company and an accounting of accounts, papers, etc., held by an allied concern, the American Steel Syndicate. The rolling mill in dispute was known formerly as the Biesecker Steel Mills at Chagrin Falls, in which the Imperial Steel Co. claimed to have an interest amounting to $40,000. The Imperial Co. also claimed to have a capital stock of $100,000.

The Commercial Club of Florence, Ala., got busy the other day when it was shown that the Philadelphia stack of the Sloss-Sheffield Steel & Iron Co. is idle on account of the recent raise in its tax valuation, it being listed for an amount nearly double that of stacks of like capacity in other counties of Alabama.

PERSONALS.

W. F. Robertson, of the Robertson Iron & Steel Co., Cincinnati, sailed Saturday for a tour of Europe.

D. Z. Norton, of Oglebay, Norton & Co., Cleveland, sailed this week for a six weeks' trip to Europe.

Humphrey Bond, of Vivian, Bond & Co., New York City, is expected to return this week from an extended European trip.

J. B. Doan, vice president of the American Tool Works Co., Cincinnati, has returned from a three months' tour of Europe.

J. B. Doan of the American Tool Works Co., Cincinnati, has returned from Europe, where he investigated a number of large tool manufacturers.

William I. Schaffer has been elected to the directory of the board of the Seaboard Steel Casting Co., taking the place recently made vacant by the death of John B. Roach.

John R. Marshall, who has been superintendent of the Brooks locomotive plant, has been transferred to the Richmond, Va., plant of the American Locomotive Co. as superintendent.

W. L. Lee, purchasing agent of the Republic Iron & Steel Co., now has his headquarters at the main offices of the company, Frick Building annex, Pittsburg, having been transferred from Chicago, July 15.

W. L. Kauffman, general manager of the Youngstown works of the National Tube Co., has severed his connection with that corporation, and is now associated temporarily with the Ohio Iron & Steel Co.

C. W. Landrum, of Carthage, Mo., a veteran lead and zinc miner in the Joplin fields, has been selected by the recently organized Wisconsin Zinc Co. to take charge of the company's properties in southwestern Wisconsin.

John P. Sykes, superintendent of the Eddystone, Pa., plant of the Baldwin Locomotive Works, has been placed in charge of the Standard Steel Co. plant at Burnham, Pa. He is succeeded at Eddystone by S. M. Vauclain Jr.

F. J. Llewellyn, division contract manager for the American Bridge Co. at Chicago, returned last week from his trip to China and Japan. Mr. Llewellyn returns much improved in health, for which purpose the trip was undertaken several months ago.

Morris P. Winchell has resigned his position as chief geologist for the Great Northern Railway Co. and is now open to engagements in the general practice of his profession at Minneapolis. As in the past he will devote special attention to copper and iron ore mines and mining litigation.

William R. Strickland has accepted a position as mechanical engineer for the Detroit plant of the American Radiator Co. He recently returned from Porto Rico, where he was construction superintendent for J. G. White & Co. on the construction of their Comeiro hydro-electric plant.

J. F. Buckley, three years superintendent of the John Thompson Mfg. Co., Beloit, Wis., and for the past two years superintendent of the pump department of the Fairbanks-Morse Co., at Beloit, has resigned his position with the latter concern. Mr. Buckley will be identified with the Witte Iron Works, Kansas City, Mo., as superintendent and works manager. The Witte company, an establishment of 38 years' standing, manufactures gasoline engines and other machinery.

OBITUARIES.

Thomas Chalmers Jr., who for many years with his brother, W. J. Chalmers, was connected with the firm of Fraser & Chalmers, which later became the Allis-Chalmers Co., died July 21 at Chicago, aged 51 years.

Augustus D. G. Cherry, at one time connected with the steel industry of Pittsburg, died recently in that city. Mr. Cherry came to Pittsburg in 1865 and was connected with the Keystone bridge plant of the Carnegie Steel Co., serving as secretary for 21 years. He resigned this position on account of ill health.

Carl F. Lunkenheimer, one of the two vice presidents of the Lunkenheimer Co., Cincinnati, died July 19 after a long illness in Pasadena, Cal. He went to Pasadena in 1904 in search of health and made his home there. After Mr. Lunkenheimer left Cincinnati, where he was actively engaged in business, his duties were assumed by Vice President Samuel L. Moyer of the Lunkenheimer Co. He is survived by a widow and two children.

John H. Pierce, of Kewaunee, Ill., a leading manufacturer of the state, died July 22. Mr. Pierce was born in Aurora, Ill., Jan. 11, 1843. In 1868 he aided in establishing the Western Tube Co. and served as its first secretary until 1890, when he was elected president of the company. In 1903 he was elected president of the Illinois Manufacturers' Association. He was also interested in politics and during the dead-locked Republican state convention in Illinois in 1904 was mentioned as a desirable compromise candidate for governor. Three years ago, Mr. Pierce disposed of his interests in the Western Tube Co. to the National Tube Co. and embarked in the coal trade, becoming president of the Big Creek Coal Co., and was active in its management. Surviving him are a widow and three adult children.

William F. Fletcher, for over a third of a century manager of the Florence Iron Foundry, Florence, N. J., died late last week at his home in that city. The day of his burial was observed by the general closing of the manufacturing and business establishments of Florence.

Building a Reservoir.—Active work is now under way upon the construction of a large central reservoir near Donohoe Station, Pa., which will hold in reserve a water supply for the operations of the Jamison Coal & Coke Co. A storage capacity of 110,000,000 gallons, equivalent to the total needs of the company for a period of four months, will be provided. The reservoir will be formed by the erection of a dam across a natural depression, and the excavating work required will be at a minimum. A line of eight to nine miles of 8, 10 and 12-inch cast iron pipe will convey the water by force of gravity to the company's three coking plants, and practically no power whatever will be used in this operation. The reservoir is expected to be completed by fall. The construction of this work is expected to fortify the Jamison company against the inconveniences of drought and insufficient water supply, which are not infrequent in the Connellsville regions during the summer season.

May Appoint Trustee.—As August 1 is the date to which the receivership of Milliken Bros., Inc., was last extended, it is not unlikely that the close of the current month will witness important changes in the operation of the big Staten Island plant. When the recent extension was granted the receivers, it was stated that some reorganization plan might be looked for by the time set. The report is in circulation in the eastern steel trade that a trustee may be named to supplant the three receivers in charge of the property. The steel works are not in operation, but the bridge shop is being run and an important tonnage has been handled during the year of receivership. Several important orders, deliveries on which will run well into the future, have been booked during the past week.

Connellsville coke production for the first half of this year was 4,245,246 tons, compared with 10,755,452 tons in the corresponding period last year.

AN IMPROVED GERMAN COKE OVEN SYSTEM

Description of the Von Bauer Type, Which Avoids Reversals in Currents and the Use of Large Regenerative Chambers

Negotiations which are now under way give reason for assurance that within the early future there will be constructed in this country several batteries of the von Bauer coke ovens of a recently developed type which includes marked improvements over installations now successfully operating in England, Germany and Austria. These ovens, which are the invention of Dr. Theodore von Bauer, one of the foremost authorities on coke-making today, can be arranged either with or without the recovery of by-products, and are in a number of respects radically different from the type of oven commonly employed in America.

In the construction of its latest type, the von Bauer oven emphasizes two important attainments. The preheating of the air is accomplished without generators or separate recuperators, a feature which has been demonstrated to work a very appreciable economy. The system is otherwise noteworthy in that it permits of the maintenance of uniform conditions throughout the process of carbonization, by doing away with reversals in the direction of the currents of the combustion-product and preheated air, a factor of utmost importance inasmuch as these reversals commonly result in violent changes in temperature, with consequent impairment of the ovens' durability and efficiency. It is stated that these construction features, though seemingly simple, represent the result of 25 years' experimental work, in the course of which other details in the von Bauer oven have been worked out to a nicety.

According to the statements of the inventor, this system secures the minimum cost of construction and, because of its simplicity in design and operation, the oven is extremely strong and durable, with low costs for labor and maintenance. No electrical or other reversing apparatus is employed and there is a complete absence of internal adjustable tiles. It is further claimed that the oven will yield increases in coke production, in surplus gas and in waste heat, tar and ammonia. The coke breeze is kept at a minimum and, finally, the type is such that expanding coal can be used.

Method of Operation.

The method of operating the Von Bauer oven is plainly indicated in Fig. 1, which shows longitudinal and cross sections through the coking and combustion chambers. Either hand or machine charging can be employed. In the case of the former, coal is fed through hoppers into the large coking chamber placed over the foundation arches. If the by-products are to be recovered, the gases generated in the coking chamber are carried out through the main standpipes leading to the large U shaped gas main situated over the oven. This main leads to the tar, ammonia and benzol extraction plant. After being purified, the gases are returned through the small main marked "gas" in Fig. 1, and by means of special individual connections are introduced as fuel gas into the mixing and distributing flue systems, which will be referred to in detail later. From the flue system the gases enter the combustion chambers where they meet the highly preheated air. The gases of combustion are then drawn down and collected in the collecting flues located beneath the coking chambers and are finally discharged into the main flue which leads either to the boilers or to the chimney.

Regenerators.

Perhaps the most striking feature of this oven is the absence of elaborate regenerators. For these there is substituted a simple, compact type of foundation shown in Fig. 1. Large foundation arches provide spaces under the ovens from which the air for combustion is taken. These arches serve not only for the preliminary heating of the air supply but for the cooling of the oven foundations as well, an arrangement which restricts the required opening in the sides of a battery of ovens to those necessary for the charging and discharging of

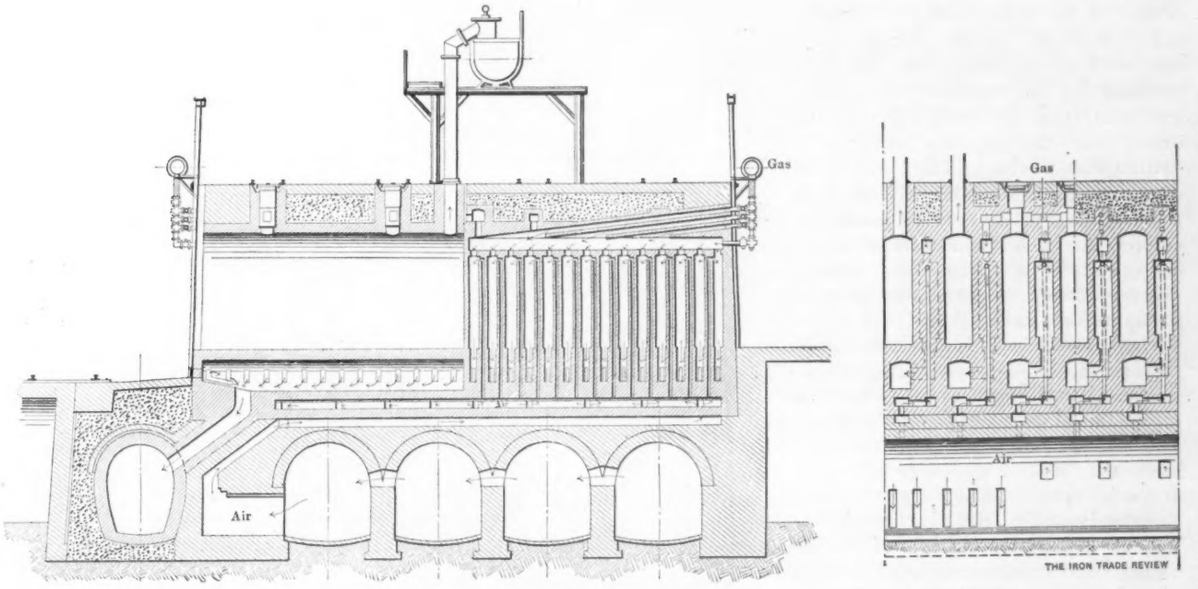


FIG. 1—COKE OVEN SYSTEM DESIGNED BY DR. VON BAUER.

the coking chamber by machinery and in the top to those required for admission of coal, in the case of hand-charging, and for the necessary gas-take-offs.

The air for combustion is supplied in four separate compartments formed by the foundation arches, the air inlets to which are controlled by adjusting dampers, and enters the distributing ducts, where it is heated to about 1,100 degrees Fahr. by being exposed to the heat from the gas flue. From the distributing ducts the air rises through special uptakes molded in the material forming the walls of the coking and combustion chambers, from which it extracts sufficient heat to increase its own temperature to about 1,920 degrees Fahr. by actual measurement. This arrangement is doubly effective in that it not only provides a simple and convenient means for preheating the air for combustion, but also provides for the extraction of excessive heat from the vital parts of the ovens, thus checking any tendency to detrimental effects. The preheating of the air for combustion without large regenerators renders a large amount of surplus heat available for steam boilers and other purposes, at the same time insuring absolute uniformity in heating the entire oven wall.

The preheated air is then introduced, through separate openings, into each individual combustion chamber, where it meets the gases of combustion. These move in a downward direction only, while the direction of the preheated air is always upward. Because of the highly preheated state of the air, the combustion is naturally complete and the resulting high temperature is produced in the combustion chamber at and below the surface line of the coal charge in the coking chamber. The downward course of the combustion gases prevents the superheating of the upper parts of the coking chambers and the subsequent decomposition there of valuable gases before their removal to the collecting main.

Distribution of Fuel Gases.

The uniform distribution of the fuel gases into the vertical combustion chambers is insured by the arrangement of two longitudinal flues on top of these combustion chambers between the coking chambers. These two flues are arranged immediately above each other, the upper flues communicating with the lower ones of the same set by means of a series of openings and, in a similar manner, also with the upper flues of the adjoining sets across the tops of the intervening coking chambers, while the lateral connections also pass over the charging openings on top of the charging chambers. In the case of "direct" operation, the crude gases from the coking chambers, naturally varying in composition according to the more or less advanced stage of the coking process, are mixed to a uniform state by this arrangement. A recent innovation in the von Bauer oven in connection with the regulation of the fuel gas supply to the distributing flues is the omission of internal adjusting tiles and the substitution of an independent direct gas supply to different parts of the flue through inclined passages. These are controlled by valves, located immediately opposite the upper parts of the partition walls where they are easily accessible. Peep-holes are provided for observing the action. This arrangement is of further advantage in permitting the proper regulation of the gas supply to the combustion chambers where the ovens are widened toward the discharge end to provide for the expansion of coal, with the necessity of increasing the amount of heat for the larger body under treatment. This arrangement also prevents tuyere stoppages by napthalin.

The double flue system is of further importance in that it allows the admittance of air in the upper in case a higher temperature of the upper parts of the coking chambers is desired. It also makes possible the use of generator gases from other sources in case the coking coals do not yield a sufficient quantity of gas for fuel purposes, or the generated and purified gas is intended for more economical purposes. The arrangement also precludes the possibility of excessive temperature variations, which might result in cindering and melting the walls or in disastrous underheating in spots.

With the oven as last improved, it is stated that numerous tests have shown that the transmission of heat from the walls of the coking chambers to the coal is gradually reduced toward the end of the coking period and that the layer of coke nearest the heated wall and the gases generated in the chamber become hotter in proportion to the advance of the coking process toward the center of charge of coal. In fact, it is declared that during the last third of the coking period the heating of the coking chambers can be dispensed with entirely. In order to hasten the completion of this period, a patented device is employed to uniformly transmit the heat from the

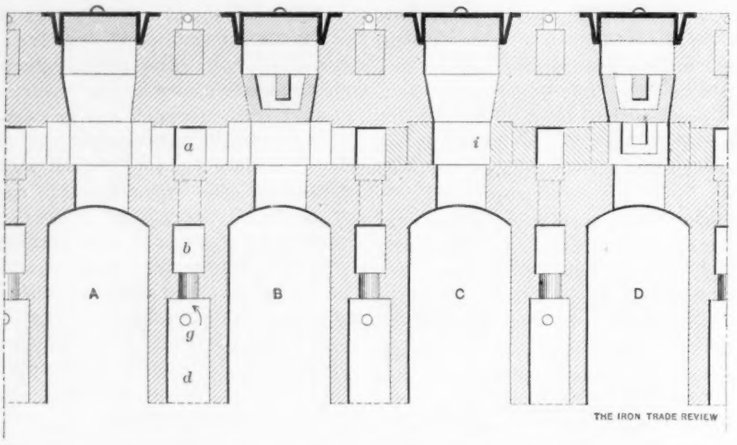


FIG. 2—THE DIFFERENT METHODS OF OPERATING THE VON BAUER COKE OVEN.

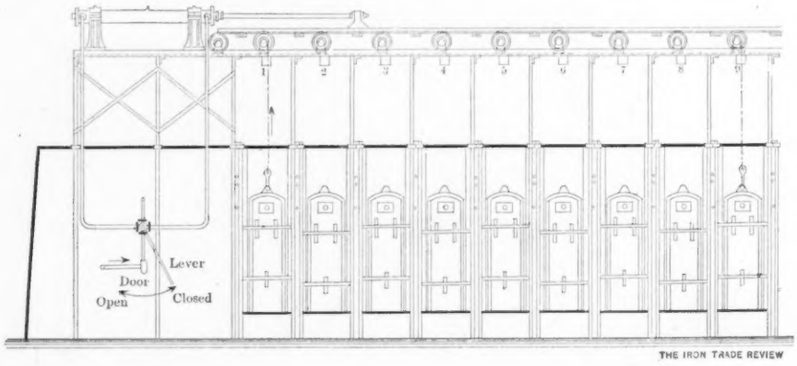


FIG. 3—ELEVATION OF A BATTERY OF OVENS WITH DEVICE FOR OPENING AND CLOSING THE DOORS.

walls of coking chamber through the cracks and pores of the finished outer coke layer to the core of the coking coal charge. This not only shortens the coking period but also renders the process more uniform and, because of the lower temperature of the gases generated during this period, decreases the amount of washing and condensation surfaces required. The yield of surplus gas is also considerably increased, as the rational heating of the oven walls in a downward direction is maintained simultaneously in all combustion flues.

Capacity.

For a battery of 100 ovens a yearly capacity of 180,000 to 190,000 tons of blast furnace coke can be secured, the average coking period being about 24 hours. The ovens will yield from 45 to 50 per cent of surplus gas, depending upon the kind of coal used, and the fuel gases, because of their short travel, have a higher temperature than those from other systems where their heating value is necessarily reduced by reason of their passing extensive regenerators and checkerwork. The task of converting these ovens from a "direct fire" to an "indirect fire" operating system, or back again, can be accomplished without affecting either the quantitative or qualitative producing capacity, and an instance is on record where a complete change from one system to another with a battery of sixty ovens was made in less than eight hours.

Constructional Features.

In the construction of this oven a number of other points are emphasized. The omission of all gas distributing flues from the lower part reduces its temperature to such a point that there is no danger of deterioration. The partition walls of the coking chambers are strongly built, being tied in a transverse direction by partitions extending from top to bottom, thus eliminating all structural weakness caused by longitudinal combustion flues. The top of the oven setting is solidly constructed, as all openings through it have been avoided, with the result that no water can enter the upper portion of the masonry and that all danger of evaporation, the formation of steam, etc., is removed. The coking chambers are built thoroughly gas tight, in order to prevent the escape of any gases into the combustion chambers. On account of the short travel of the gases of combustion, a low chimney draft is required, so that there is no possibility for creating a vacuum in the coking chamber. The necessity of cleaning the mixing flues by hand is obviated through the introduction of a small steam pipe, employed for blowing out from time to time any soot that may accumulate when operating the coke ovens "direct."

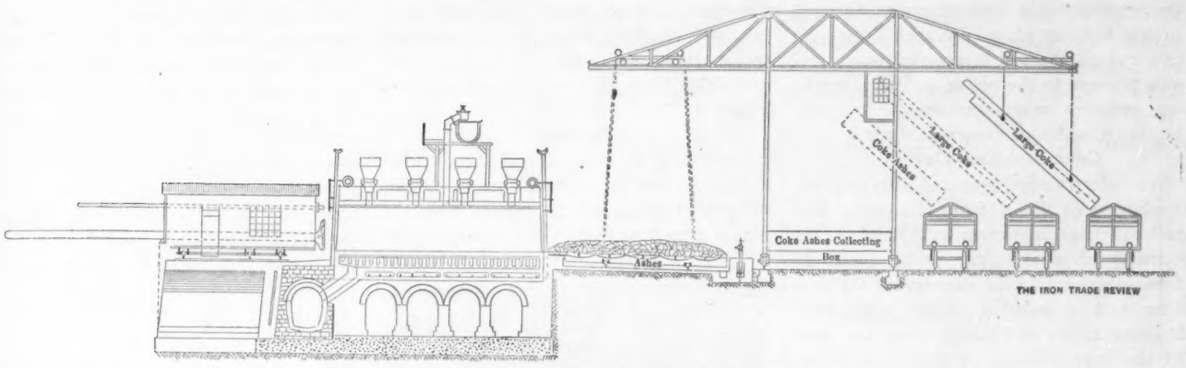


FIG. 4—TRAVELING COKE HANDLING DEVICE.

The various methods of operation are made clear in Fig. 2, showing a vertical section through the upper part of a number of coking chambers. In this diagram

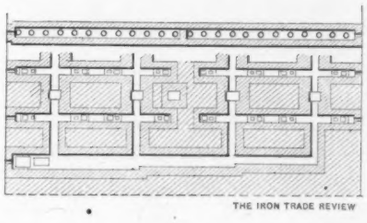


FIG. 5—HORIZONTAL SECTIONS THROUGH THE UPPER AND LOWER DISTRIBUTING SECTIONS.

A is arranged for hand charging a "direct fire" oven; B is for machine charging the same; C is for hand charging the "indirect fire" or by-product oven, and D is for its operation by machine charging.

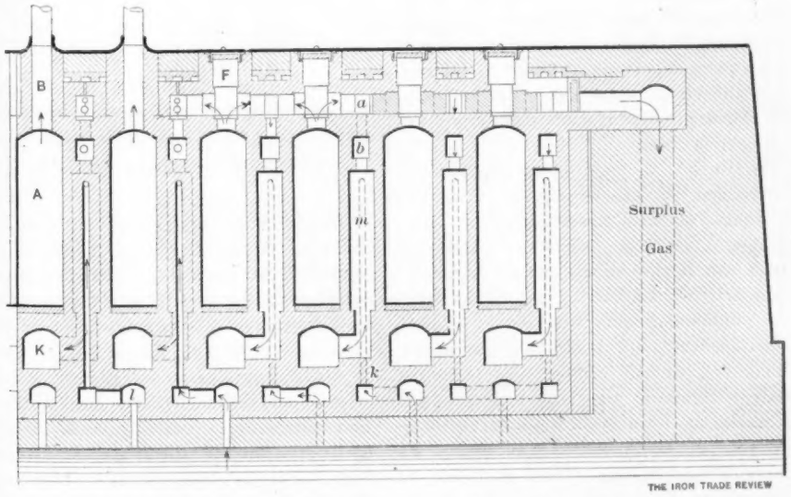


FIG. 6—CROSS SECTIONS; END OF BATTERY WITH WASTE-HEAT FLUE.

Door Operating Mechanism.

For lifting and lowering the doors of the von Bauer ovens a patent hoisting apparatus is provided, the details of which are shown in Fig. 3. All the doors of one battery can be operated from one place in from three to five seconds, without exposing the operator to the heat, smoke and steam from the coke, and at the same time avoiding excessive heat losses and the impairment of the quality of coke near the doors. This arrangement saves the services of a man in each shift and, in connection with other labor saving devices, effects a very appreciable economy in this direction.

As will be seen by Fig. 3, the buckstays of the oven settings are extended a certain distance above the top of the set-

ting and there connected to each other by a continuous girder of steel channels. Over each oven door is placed a small idler for the lifting chain or cable on the same shaft with a larger roller. These rollers support a rod which is provided with suitable eyes or hooks to receive the corresponding hook or eye on the end of the hoisting chain for each door. At one end of the rod is coupled in a suitable manner to the piston rod of a working cylinder suited for operation either by steam, water or compressed air.

Coke Loading Device.

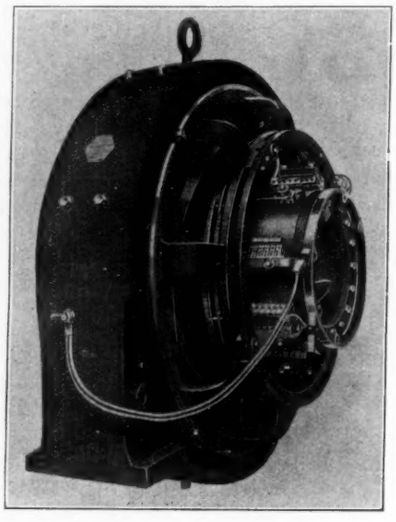
An electrically operated device for loading coke direct from the ovens into railroad cars is shown in Fig. 4. This consists of a traveling crane about 33 feet in length, with cantilevers 30 feet long and a hoisting trolley with four hoisting cables or chains. Near the base of the four columns of the crane frame is arranged a bin for the coke ashes. The coke from the ovens is taken up in coke-pans constructed of steel and fitted with wheels so that they can be placed in front of any oven in the battery. The upper half of these coke pans is arranged as a grate of sufficient length and width to allow the charge of one oven to be conveniently spread out and quenched. This grate is of flat iron on edge, with spaces ⅜ to ⅝-inch in the clear, and the clear, and the usual dimensions of such a coke pan are 8 by 30 feet in the clear.

In operating this device, as soon as one coking chamber is to be discharged the coke pan is placed in front of the oven, the discharging machine pushes the finished coke upon the pan and two men immediately spread and quench the coke. While this is cooling, the finished coke from another oven is pushed upon a second pan. Then, when the coke from the first oven is sufficiently cool, the hoisting trolly elevates the coke pan to a height of 15 feet and conveys it over an empty car. The hoisting mechanism of the trolley then tilts the pan to an inclined position, causing the coke to be discharged and the coke ashes to be deposited through the grating in the bottom of the coke pan. With the pan in this position, the trolley is then run over the ash reservoir, when by the opening of a damper at the head of the ash box, the ashes are deposited. The empty coke pan is then lowered and placed upon the track in front of the ovens ready for the next filling. The time required for the complete operation of one unit, that is, loading the coke from one oven, emptying the ashes, etc., and returning the pan to the front of the next oven, is about ten minutes.

In ten hours, it is stated, three men can easily accomplish the task of quenching and loading the coke from 40 or 50 ovens; this would correspond to a capacity of the traveling crane of 80 to 100 ovens in 24 hours. Aside from this speed in handling, another advantage is gained by this means of loading the coke in that the avoidance of much intermediate handling eliminates the breaking up of the coke to a considerable degree and allows its shipment in large pieces. The coke storage and shipping floor can be arranged on a level with the discharging and quenching floor, thus largely reducing the height of the foundations.

Efficiency.

Something of the practical efficiency of this oven may be gathered from an official report of the Krupp colliery Hanover for a recent period. This contains the statement that the average yield of coke in the von Bauer oven was 73.6 per cent, against 68.4 per cent in an adjoining oven of a type extensively employed; these results correspond to those obtained by the crucible test, in the case of the latter oven. This increase of over 5 per cent is explained as being due to the uniform temperature conditions in the von Bauer oven, as this favors a partial decomposition of the heavy hydrocarbons and a subsequent deposition of a part of the carbon therefrom upon the coke, and also to the arrangement and location of the preheating flues.



BURKE THREE-WIRE GENERATOR.

In Europe the von Bauer patents are controlled by the Gesellschaft fur Erbauung von Muttenwerksanlagen, Duesseldorf, Germany, which is associated with the Berlin-Anhaltische Maschienenbau-Actien-Gesellschaft, one of the largest continental manufacturers of by-product apparatus and builders of gas works. This last named company controls the patent rights in the United States and Canada, in conjunction with Frederick J. Mayer, of Baltimore, a gas expert of wide reputation, and David B. Carse, 12 Broadway, New York City.

A NEW THREE-WIRE GENERATOR FOR STEEL MILLS.

A new type of three-wire generator, especially adapted to the trying operating conditions found in steel mills using electric power has been recently placed on the market by the Burke Electric Co., Erie, Pa. By an improved system of armature winding and arrangement of conductors, the two voltages necessary in the three-wire system are generated directly in the armature, a single collector ring being provided for the neutral wire; the current for the outside wires is taken from the commutator in the manner usual for two-wire machines. The generator is compound wound; the shunt and series spools are separately insulated and so supported as to permit thorough ventilation. The armature laminations which are of sheet steel carefully annealed and insulated are held in place by the cast iron end flanges which support the armature windings.

The generator carries its full rated load continuously without a temperature increase exceeding 35 degrees Cent. on any part, except the commutator, upon which the rise will not exceed 40 degrees.

The machine has liberal overload capacities and the regulation on unbalanced load is exceptionally good. These two features particularly commend it to steel mill service. When the load on the line is unbalanced 25 per cent, the voltage on the two sides of the three-wire system at the generator does not differ from the normal neutral voltage by more than three volts.

Splendid Furnace Record: — The Robesonia, Pa., stack of the Robesonia Iron Co., Ltd., was blown out Friday, July 10, after a run of three years, three months and 18 days. The stack and its accessories were in good condition, apparently fit for another year's run. Cornwall ore, containing from 42 to 48 per cent iron, was used exclusively. The amount of iron made was 164,414 tons of which 77½ per cent was No. 1; 20 per cent was No. 2, and 2½ per cent was No. 3. No mottled or white iron was made in the entire run with the single exception of 47 tons produced when blowing in.

Gas Driven Engines.—The William Tod Co., Youngstown, O., is about ready to install four gas driven blowing engines to be used in connection with the two new blast furnaces at the Ohio works of the Carnegie Steel Co. These engines are 42 inches gas cylinder, 80 inches air cylinder and 60 inch stroke. The William Tod Co. is also building a 32, 64x48 horizontal vertical steam engine for the Morgan Spring plant of the Youngstown Sheet & Tube Co.

NEW CHICAGO WAREHOUSE OF CRUCIBLE STEEL CO. OF AMERICA

The present warehouse of the Crucible Steel Co. of America on So. Clinton street, Chicago, has been sold to the Chicago & Northwestern railway to make room for that road's terminal improvements. The new warehouse which is now being built at 117-120 Washington Boulevard will be especially designed for the storage of bar steel and the most economical use of floor space. In addition the building will be artistically and splendidly finished, on the outside in brick, stone and terra cotta and inside in oak. The steel columns will be closed with oak panels and the ceiling beams will be filled in with plaster.

At present the building will have three stories although the design permits of a future extension to five stories. There will be no basement except for a sufficient excavation at the front end of the building for the power and heating plant. The concrete piers on which the building is supported however, are put down 12 feet 3 inches so that at any time a basement should be desired it will only be necessary to dig out the dirt and an 8-foot collar can easily be obtained.

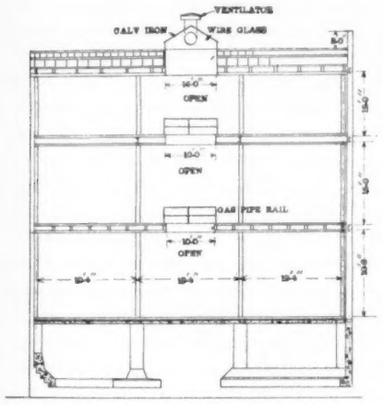


FIG. 1—CROSS SECTION OF CRUCIBLE STEEL CO.'S WAREHOUSE.

The specially interesting feature of the building is the plan for storing the steel. The building is 60 feet 6 inches wide by 151 feet 8 inches long. The foundation piers and supporting steel columns are spaced 19 feet 4 inches transversely and 11 feet 8 inches long. The foundation piers and supporting steel columns are spaced 19 feet 4 inches transversely and 11 feet 8 inches longitudinally. These divide the floor space into three longitudinal bays and 12 transverse bays, the bays at either end of the building being somewhat larger. With the exception of a center aisle on each floor, the space devoted to a shipping office at the rear of the ground floor and the general offices in the front part of the second floor these bays will be given entirely to storage purposes.

From I-beam uprights in the wall pilasters, channels will be strung horizontally between the bays about 5 feet 6 inches above the floor. In this way the run of the floor will be separated into stalls extending down each side of the building. The channels will extend into the center aisle about 2 feet 6 inches beyond the line of columns leaving a clear passageway down through the building about 14 feet wide. The steel will then be stacked in these stalls on three sides, against the wall and the channel which will also be fitted with wood blocks for supporting the steel. This leaves the center of the bay open so that there is perfectly free access to the material and at the same time practically doubles the standing space for the steel compared with the arrangement of the steel along the walls as in the present warehouse.

A narrow gage track runs down

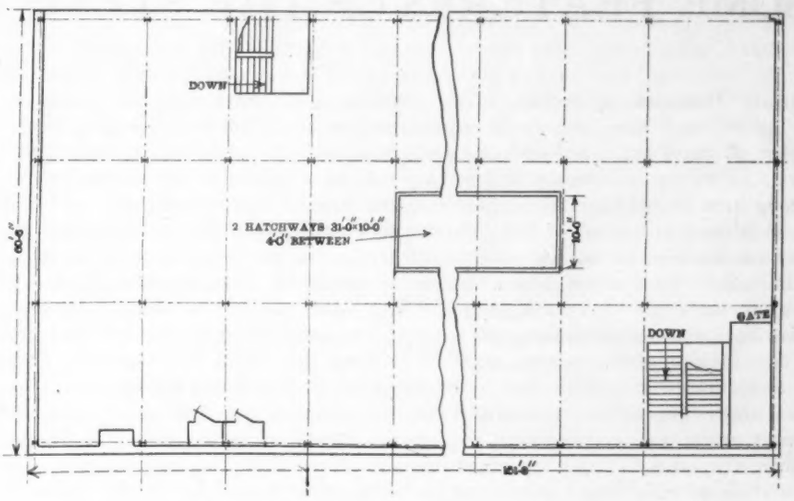


FIG. 2—SECOND FLOOR PLAN, CRUCIBLE STEEL CO.'S WAREHOUSE.

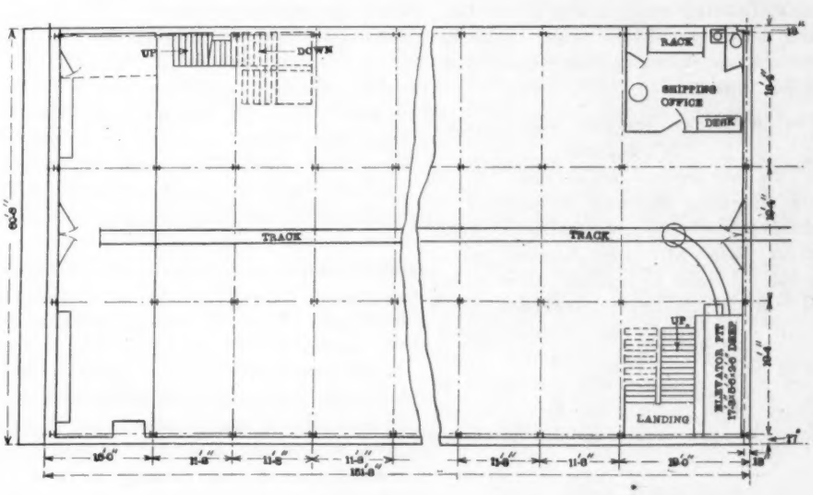


FIG. 3—THE FIRST FLOOR PLAN, CRUCIBLE STEEL CO.'S WAREHOUSE.

through the center aisle on which the steel can be trucked to the shipping end of the building. The ground floor is laid with a grade toward the rear end of the building except for the front bay and is built of wood paving blocks on concrete and sand. The other floors are made of double flooring. The rear of the building opens out on Waldo place, which is 40 feet wide, providing ample room for handling deliveries. A glass awning extends out from the building as a cover for wagons in loading and unloading. The lighting of the interior of the building is obtained by means of a wire glass skylight 70 feet long by 10 feet wide and a well of practically the same dimensions which extends down through the two upper floors to the main floor.

The Chicago branch of the Crucible Steel Co. carries a full line of crucible steel, open-hearth steel and sheet and bar copper. The new warehouse has been occupied since July 1.

SOME FEATURES OF THE STEEL RAIL SITUATION[1]

By Charles B. Dudley.[2]

Influence of Section.

Let us turn now to two or three other features of our subject; and first, as to the sections. It has already been hinted that the section has been blamed for some of the difficulties encountered in making good rails. The makers have urged, and we think with good show of reason, that the distribution of metal between the head, web and foot of the rail, in many of the sections, was such that it was practically impossible to finish the heads at the proper temperature. And since the sections were specified by the railroad engineers, the rail makers have felt, and we think justly so, that in so far as the section was an element in good rails, they could not be held responsible for poor rails. This criticism was felt to be so valid that within the past two years, two independent organizations have taken up the question of section de novo. One large railroad through a committee of its own officers, reinforced by practical rail manufacturers; and the American Railway Association, through one of its own committee, assisted also by a number of practical rail makers, have both, but independently, devoted much study to the section. The results of their deliberations have culminated in three types of sections.

The American Railway Association's "A" Section.

The one known as section "A" of the American Railway Association, is characterized by a shallower head, wider base, with thin flanges, and a greater height of section than either of the other two. Regarded as a beam or girder, this section is undoubtedly the strongest section of the three. It is apparently advocated by those who think that more of the duty of the track should be borne by the rail, and less by the other elements. It is obvious, as has already been stated, that the stronger the rail, as a beam or girder, the more the strains are distributed, and the less need therefore, for exacting attention to the other features of track maintenance. Its advocates think that the distribution of metal between head, web and foot, is such that the rolling difficulties and especially the question of finishing temperatures, can be met with entire success. It would be a bold man who would be willing to affirm that this section will not ultimately prove to be the best of those under consideration, and especially that the transference of more of the duty to the rail, will not result, as has already been indicated, in ultimate economy. Those who oppose this section, fear that the shallow head is an element of weakness. According to their view, with such steel as it is at present possible to get in rails, the pounding of the heavy traffic, will lead to such crushing and splitting of the heads, owing to internal physical defects in the metal, that the section will prove a failure, especially on roads with heavy wheel loads and dense traffic.

American Railway Association's "B" Section.

The second type of section, known as section "B" of the American Railway Association, is modified to meet this latter view. The head is practically the head of the Am. Soc. C. E. section, thicker flanges, less height over all, and the same thickness of web. The distribution of metal is believed, as in the "A" section, to successfully meet the manufacturers' criticisms, the head and foot having slightly over 40 per cent each of the metal, and the web the balance. This section is confessedly a compromise, but there goes with it the hope that it will ultimately prove itself worthy of being adopted as the standard recommended section of the association. This section is weaker as a girder than the "A" section, but is believed to have sufficient factor of safety so that no difficulties will arise from this cause. These two sections have been proposed as "recommended practice" by the American Railway Association, and the question as to which is the better of the two, or indeed as to whether some other section is not still better than either, has been referred to the American Engineering and Maintenance of Way Association, an organization composed largly of railroad operating officers, to study and accumulate data, and make a report, after the sections have been tried in actual service.

Pennsylvania Section.

The third section, known as the "P. S." section of the Pennsylvania system, is a step farther away from the "A" section. It has a still heavier head, a narrower base, thicker flanges, and the same thickness of web, as the "B" section. The radius of the web is smaller, thus producing more of a buttress where the head and web join. The experience of the Pennsylvania system seems to be that with its heavy wheel loads and dense traffic, and with the grade of steel that it is now possible to get in rails, more rails fail from crushing and disintegration of the head, apparently due to the pounding of the traffic, than from any other one cause and accordingly in this section, the maximum effort has been made to strengthen the head in its weakest point. The distribution of the metal is satisfactory, and the strength of the rail, as a girder or beam is practically the same as the "B" section, which is believed to be abundant for present conditions.

Which if any of these three sections will survive and become the standard section of the railway world in this country, it is of course impossible at the present moment to say. However, the issue is now clearly defined as never before, and the different ideas prevailing among expert engineers are clearly represented in the

[1]Presidential address before American Society for Testing Materials at the Atlantic City (June, 908) meeting. Continued from The Iron Trade Review of July 23.

[2]Chemist Pennsylvania Railroad, Altoona, Pa.

types presented. All the sections have been designed to meet the criticism of the steel makers so that from this time forward if these sections are used, there should be no excuse for improper finishing temperatures. It may happen that progress in steel metallurgy will so diminish physical defects in the steel, and so minimize the adverse effect of segregation, that all three sections will be found worthy of perpetuation. It is believed that a decided step forward has been taken by the preparation of these three sections, and much is expected from them in the next few years to come.

Discard.

The question of the discard has occasioned many words, during the discussions of the past two years. There is material enough in this feature of our subject for a long paper. I fancy many of us had more positive ideas on discard three or four years ago than we have at the present moment. The more the subject is studied the more difficult it becomes, seemingly, to express a final opinion that we are willing to stand by. If every ingot solidified in the typical way, and was like every other ingot, the question of discard would be easy. But it would almost seem as though every heat of steel was a law unto itself, and was different from every other heat of steel, and nearly the same might be said of every ingot. When we come to consider the conditions there seems to be much reason why this should be so. The differences in temperature at the time of casting, the more or less incompleteness of the chemical reactions, when the metal leaves the ladle, the difference in chemical composition of the different heats, the rate of pouring, the differences in the condition of the molds, the differences in rate of cooling dependent on surrounding conditions, the differences in practice at the different works, especially in the matter of covering and artificially cooling the top of the ingot, the length of time that elapses before the ingots are shipped, and the more or less fluid condition of the metal on the inside of the ingot when it reaches the first pass, to say nothing of accidents or mishaps that may occur in handling the semi-fluid ingots, all have an influence on the location of that part of the ingot which is supposed to contain the poorest of the metal, and which it is the object of the discard to prevent from getting into the rails.

In view of these uncertainties, we cannot but think that the position taken by the Pennsylvania system and American Railway Association in their proposed specifications, is the most reasonable one, viz., to leave the discard to the manufacturers, and to safeguard the product by proper tests, especially by choosing the test piece from such a location, and making the rejections such, that it will be to the interest of the manufacturer to voluntarily discard the metal which will not stand test. This has been our practice at Altoona for many years. We have a number of specifications for different steel products, in which the word "discard" does not occur, and never has. An illustration will perhaps make this whole matter clear. When our axle specification was issued the whole question of discard, was most carefully considered, and it was finally decided to select one axle at random for test from each heat of steel, after the axles from that heat had all been made up, stamped with the heat number, and put in a pile by themselves, and further if the test axle stood all the tests, all the axles made from that heat were accepted, and if not all were rejected. After the specification had been in operation a short time, a manufacturer who had worked with us during the development of the specification, said: "There is steel enough in each one of our ingots to make 13 axles of the size you are now using. As a matter of fact we only make and offer you for test 9; for if we should make the whole ingot into axles, and you should get for test one made from the steel which we now discard, you would condemn the whole heat, quite to our loss." We are firmly of the opinion that the matter of testing rails can be so handled, as to give similar satisfactory results.

Tests and Testing.

And this brings us to the question of tests and testing. During the past few years, much light has been thrown on this subject, and the truth compels us to say, that a situation has been found that in some respects would be ludicrous, if it was not so near the tragic. Let us see what the conditions have been:

1. The manufacturers have, in many cases at least, selected the rail end as sample for test. The specifications being silent on the selection of the test piece, they naturally have urged that there was nothing to prevent their doing this, and they naturally again have, so far as information can be obtained, chosen the best steel in the ingot for test. It is not claimed that all specifications have been so loosely drawn, as to permit such a suicidal practice, but it is certain that some of them have, and that the practice has been in vogue.

2. The best two in three principle has pervaded many specifications; that is to say, if the first rail end stood test, the heat was accepted, but if it failed, a second was tested. If this likewise failed, the heat was condemned. If on the other hand it stood test, a third was tested, and the rate of the heat was decided by the majority. It would almost seem as though the specification had been drawn, not with the idea of being sure that only good rails should be accepted, but with the idea of being sure that as many heats as possible should be accepted.

3. Only one heat in five, was tested; that is to say, as we understand the matter, if the rail end stood test, and the heat was accepted, that acceptance carried four other heats with it. But singularly enough, if on the other hand, the heat was rejected, that rejecting only covered the heat from which the test rail end came, and the four preceding or following heats as the case might be, got another chance for their lives. The unsatisfactoriness of such a method of testing, it seems to us, must be evident to every candid mind that knows anything about the making of steel. As has already been stated, every heat of steel is a law unto itself, and there is no certainty, that because one heat or blow is good, the preceding or succeeding four are equally good, any more than there is a reasonable presumption that if one heat is bad, the preceding or succeeding four are likewise bad. And while it is agreed that when everything is working well, successive blows from the Bessemer converter may be similar in many respects, it is not agreed that testing one blow in five gives any reasonable assurance that only good rails are accepted for use in the tracks.

We fancy the rather loose testing described in the three items above, started in the earlier days, when the strain on the rail was far less than at present, and the traffic far less dense, and has been perpetuated, partly owing to inertia on the part of railroad engineers, and partly owing to the resistance of the rail manufacturers. The wonder is, with such loose, log-rolling testing as has been in vogue, not that there have been so many rail failures, but that there have not been more.

Drop Testing.

But this is not the whole story. Until quite recently the specifications

have been equally loose in regard to the drop testing machine employed in making the tests. The weight of the tup has been carefully stated, and the height from which it must fall has been given; indeed in some cases the foot pounds of the blow are carefully given for each weight of rail, but it has apparently been forgotten that the anvil or support on which the rail rests when it receives the blow, is a most important element in the problem. It has recently developed that at one steel works the anvil was a couple of ingots laid down side by side, with appliances for holding them in place, and supporting the test rail, the whole resting on boards placed on the ground. At another steel works the anvil weighed 3,000 pounds and rested on boards, stones and gravel. One rail manufacturer recently said in my hearing, "As long as the railroads did not object why should we take measures to increase the severity of the test by putting in heavier or better supported anvils." It is gratifying to be able to state that some of the more recent specifications, while according to our ideas still far from satisfactory in the matter of testing, do show marked improvement in some of the respects mentioned above, and still better, that the rail manufacturers are co-operating in and actually suggesting some of the improvements.

A few words now in regard to some of the details of testing rails; and first in regard to the drop test. It is well known that many testing engineers do not favor the drop test for rails. To our minds however, it is the only possible available one for the present, and the following considerations seem to us to have weight in confirming this view:

1. It tests the whole rail in the condition in which it goes into the track, instead of a small fraction of the rail, as is requisite in all cases of prepared test pieces.

2. It is sufficiently rapid, so that even though every blow is tested there is no fear of delaying the output of the mills while waiting for test pieces to be prepared or for slower tests to be made. We have known of a case where, with sufficient force to handle the test samples, 55 tests have been made in half an hour on a modern drop testing machine.

3. There seems little doubt that some of the strains or shocks which the rail actually receives in track, are similar to those produced by the drop testing machine. This is we think, clearly the case with a loose joint and a rapidly moving train. In case the track bolts have become loosened, the end of the rail when the approaching wheel mounts it certainly gets a blow similar to that given by the drop testing machine. We have known rails which have given long service in track to be broken in this way and the fracture showed perfectly clean, sound metal.

4. Finally, if the specification requires that the deflection be taken the drop test reveals a good deal in regard to the physical properties of the steel.

Selection of Test Piece.

Second in regard to the selection of the test piece. We fancy it goes almost without saying, that this should always be made by the inspector. In regard to location of test piece, it is of course understood that in shearing the ingot into rail blooms, it is necessary to make the bloom from which the test rail end is to be taken a little longer than the others. It is therefore essential that the inspector or the specification should designate the bloom from which the test will be taken. Some recent specifications wisely we think, designate the top bloom of the ingot for this purpose, it being generally understood that the so-called "pipe" if there be any, and the greatest segregation and physical defects will be in this bloom. We may perhaps wisely call attention to the fact that if a cover and cooling devices are used on the top of the ingot when it is cast, the poorest steel in the ingot will not be near the top end of the top bloom, but more probably near the bottom end of the top bloom, so that if the inspector takes his test piece from the top end of the rail made from the top bloom he will be more apt to deceive himself than if he has the test piece cut from the bottom end of the top bloom. We have sometimes thought, when inspecting the practices of casting and cooling ingots in certain works that it would be better to take the discard between the first and second blooms.

Height of Drop.

Third, in regard to height of drop. We have always opposed extreme severity of tests, owing to the defects in the anvil previously referred to, if indeed they have been general, it is apparent that but little information that is of value and that is safe to follow, can be obtained from previous tests. Our own view is that something a little more severe than the rail will receive in actual service, enough for a reasonable factor of safety, is all sufficient. The trouble is we do not know how severe the shocks in service are. Some recent tests of rails which had broken short off in track made by the research committee of the Pennsylvania system, seem to indicate that a 15-foot drop with a 3,000-pound tup, and a 30,000-pound anvil would have rejected two-thirds of those which failed in service; also that the 15-foot drop actually broke as many test pieces as the 19-foot drop, other conditions being the same. These tests should be much amplified before final conclusions can be reached, but as far as they go, they seem to indicate that we must look to other causes than defective or poor steel for a portion of the rail breakages and that extremely severe testing is not necessary.

We have taken so much time with what precedes that there is no opportunity to discuss a number of other features of the rail situation. The subject is far too large for a single paper. It would be interesting to consider quite at length how to manage the results of tests, in such a way as to be strictly fair to the manufacturers and at the same time prevent the acceptance of inferior or defective rails. We would suggest that those especially interested study the specifications of the Pennsylvania system recently issued, and those of the American Railway Association, proposed at its recent meeting in New York City, April 22, 1908. Much might be written on the chemistry of the steel rail, and especially the phosphorus limit; also on open-hearth steel rails, but time and space forbid. The wear of rails has not been touched at all, and must be deferred to another occasion.

Conclusions.

Summing up and putting in concrete form our views on the present situation we are inclined to say:

1. The crying need of the hour is positive, definite information. Upon dozens of points no positive data exist. During the discussions of the past two years or more opinions have been as plentiful as leaves in autumn, but of positive, reliable, statistical information, or figures taken from properly kept records there has been a dearth that was fairly oppressive. The steel makers have not been as deficient in this respect as the railroad engineers.

2. The time seems opportune for genuine progress to be made. The railroads through their organization which in a sense speaks for them all, the American Railway Association, have taken hold of the matter with vigor and have developed a large

amount of valuable information, and for the first time in my 25 years' study of this subject, the steel rail manufacturers have shown a less antagonistic and more conciliatory and co-operative spirit than has usually characterized them.

3. The specifications proposed by the Pennsylvania Railroad System and by the American Railway Association seems to us to represent genuine progress, and to be worthy of most careful study and trial. While they may be said to represent perhaps the best that can be done until more positive knowledge is obtained he would be a bold man that would claim that they will ultimately be satisfactory or final.

4. Whether the Bessemer process can be so modified and improved as to enable it to furnish rails that will be entirely satisfactory under the heavier wheel loads and denser traffic of today and the near future, or whether the basic open-hearth will soon be the source from which steel for these rails will be furnished, are questions worthy of serious attention. Our own feeling is that if a small fraction of the time and money that has been spent in the past over the commercial development of the Bessemer process shall in the next few years be spent in getting sound ingots free from blow holes, slag and manganese sulphide, if this shall be found to be as serious as it now looks, and in overcoming or minimizing segregation it will last for many years to come.

5. The American Society for Testing Materials has a most important duty to perform at this juncture. By stimulating the development of information, by furnishing an arena for the presentation of such papers on the metallurgy of steel as are on its program for this meeting, by arousing interest in testing machines and methods of testing, by furnishing a forum where producer and consumer can meet on common ground and discuss their differences unhampered by commercial considerations or by artificial distinctions of professional ethics, and by keeping their own specifications up to date and utilizing new information as fast as it is obtained, it can so fill the field which it occupies, that when the ultimate record is made up, its contribution will be by no means among the least.

We beg not to be misunderstood in this matter. If we have called attention to loose practices, if we have indicated that as we look at the matter rail manufacturers have in the past been a little too much actuated by commercial considerations, and have too vigorously antagonized the efforts made by inspectors and engineers to secure better and safer rails for the track, if we have pointed out that in some cases specifications have been loosely drawn, and that tests and inspection have too often been one-sided and inefficient, it has not been for the purpose of holding anyone up to ridicule, or to make statements that would appeal to the popular fancy, but with a sincere desire to have the mistakes and shortcomings of the past so well understood that they will not be perpetuated in the future. There is much indication, and it may well be, that what has been done in the past was sufficient for its day. But our sincere belief is that past practices are no longer applicable, and our plea is for more conciliatory and more conscientious action on the part of the rail manufacturers and for more thorough and exhaustive study of all the elements of safe economical track on the part of railroad engineers to the end that the changed conditions about which so much has been said may be successfully met, and the rail transportation interests of the country be put on a safer and better basis.

THE HEINE SUPERHEATER.

After five years of careful experimenting, the Heine Safety Boiler Co., St. Louis, offers to the public a new superheater containing a number of unique features. The principal points which individualize this apparatus are: The superheater is so placed that the heating gases reach it at practically furnace temperature; there is no obstruction to the passage of the gases through the boiler proper; the temperature of the steam is under absolute and positive control; the superheater is completely accessible, both internally and externally. The general design of the superheater, as seen from the illustrations accompanying this article, consists essentially of a a header box of the same type of construction as the Heine boiler water leg, into one side of which are inserted U-tubes, made of 1½ inch seamless, drawn mild steel tubing, expanded into holes provided for them. Opposite to the tubes in the other sheet of the header box are a series of hand holes closed by inside plates, which give access to the entire interior of the apparatus.

The header box, which is made of flange steel plate, is entirely machine made. The hollow stay bolts, which hold the two sheets of the box parallel, are of the same size and material as those used in the construction of the boiler, and, as in the case of the boiler, provide means for introducing the soot blower, which keeps the exterior of the surfaces of the superheater tubes clean. The interior of this box is divided into three compartments, by means of light sheet iron diaphragms, which, being nicely fitted, are sufficiently steam tight to cause the steam to pass through the tubes.

The superheater is located at the side of the boiler shell toward the front and just above the last passage of boiler gases. It is supported by special castings, which rest upon the boiler tile bar and brick

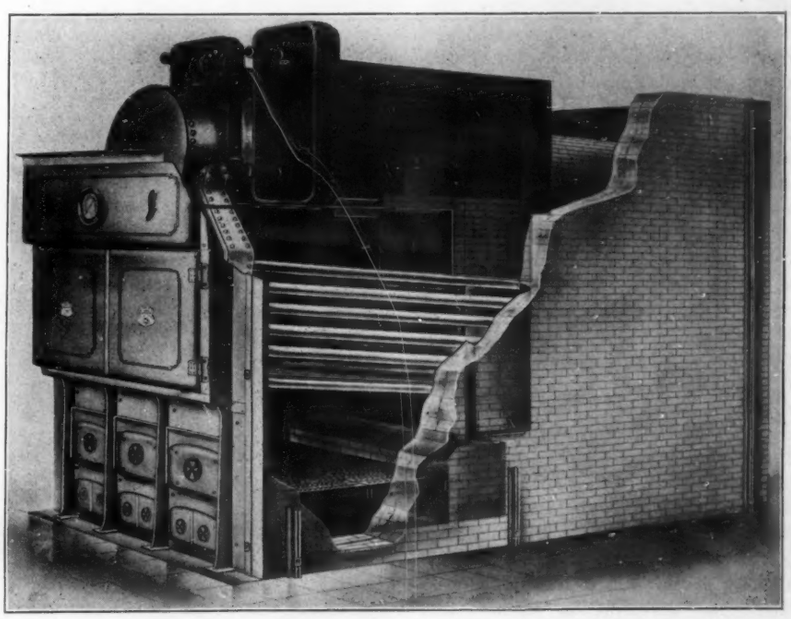


FIG. 1—SECTIONAL VIEW OF HEINE SUPERHEATER IN PLACE.

setting. Depending on the capacity and degree of superheat desired, the device may be single and placed only on one side; or in two parts connected together, one on each side of the boiler above the water line. The whole is encased in brickwork, with a fire brick roof carried by special T-bars.

A small flue, built in the side walls of the setting, carries the hot gases directly from the furnace into the superheater chamber, where they make two passes around the tubes. The flow of these gases is controlled by means of a damper at the outlet, which, when closed, stops the circulation. By opening the damper varying amounts, the flow can be regulated, giving any desired degree of superheat up to the capacity of the apparatus. There is no danger of overheating the damper, since the hot gases do not reach it until after passing through the superheater.

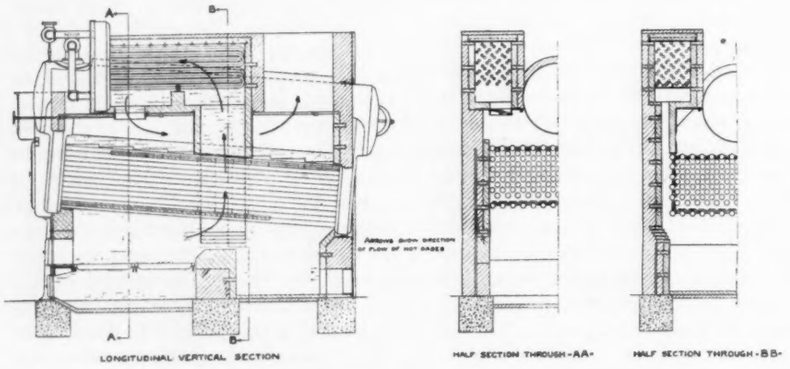


FIG. 2—SECTIONAL ELEVATIONS OF HEINE SUPERHEATER.

The usual steam outlet from the boiler is connected to the lower opening of the superheater box. From this point the steam passes into the tubes of the lower compartment, thence through these tubes out into the middle compartment, whence it goes into the second set of tubes connected with this space and through them, finally issuing into the third or top compartment, from which it enters the general piping system. The effect is to thoroughly mix the steam, giving it a uniform temperature. It should be borne in mind that steam can be superheated only at the expense of fuel burned, and, therefore, it makes no difference where the superheater is located. If it is placed in the path of all the gases which pass through the boiler, it is difficult to design the apparatus, so that it can be properly inspected and taken care of, whereas, when placed above the boiler, it is accessible and can always be inspected and cleaned. Being located above, and having no connection below the waterline, no water is introduced into the superheater. The accumulation of mud and scale on the interior surfaces is thereby absolutely prevented. The exterior surfaces are smooth, accumulate soot to a minimum degree, and can be easily cleaned by means of a soot blower introduced through the hollow stay bolts.

SPECIAL FEATURES OF A RECENTLY INSTALLED 600,000-POUND OLSEN UNIVERSAL TESTING MACHINE.[1]

The straining mechanism of the 600,000 pound testing machine under consideration consists primarily of four main screws drawn directly down without rotation by means of four large gear nuts. The screws are kept from rotating by means of four feathers in the base cover, and in the lower cross frame in the base. These four gears mesh into a large center pinion which, through a bevel gear and pinion, connect to an outside main gear. This, in turn, is driven by a 15-horsepower motor through a series of spur gears to obtain the desired speed changes.

In the construction of the weighing mechanism, all the levers, as well as the beam extensions connected to the weighing table and cross heads are of steel castings. The weighing table and tension columns as well as the rest of the supporting parts, are of cast iron. The beam extensions are bolted directly to the weighing table and braced by means of struts, tension rods and a connecting chord, so as to make a rigid structure capable of supporting a beam of 20-foot length transversely under a maximum center load of 200,000 pounds.

The tension columns, which support the upper cross head, are built in three sections and have pockets at intervals in which cross bars may be inserted to hold the upper crosshead at whatever position may be desired, depending upon the length of specimen to be tested. In order to test the long tension members and long columns provision had to be made for adjusting the crossheads for the various lengths required from the short to the long specimens.

To protect the knife edges of the lever system from the jar consequent to the rupture of a specimen under a high load, two recoil cylinders were placed directly under the main frame of the machine, so that the recoil of the lever system, acting through the lower chord on the plunger of the cylinder, is gradually transmitted to the entire framework of the machine and dissipated.

For tension tests, three sets of wedge grips are used to cover the large range of specimens for which the machine is adapted. The wedges are controlled by hand levers and operated simultaneously in each hand. They are counterbalanced by springs at the back of the crosshead. This method of counterbalancing by means of springs is new and is considered an advance on the old method with weights, where such heavy tools have to be handled.

For the complete operation and control of this machine, there are four hand levers, one of which is the main speed change lever, which operates a double

[1]Abstract of paper by T. Y. Olsen read at Atlantic City meeting of American Society for testing Materials, June, 1908.

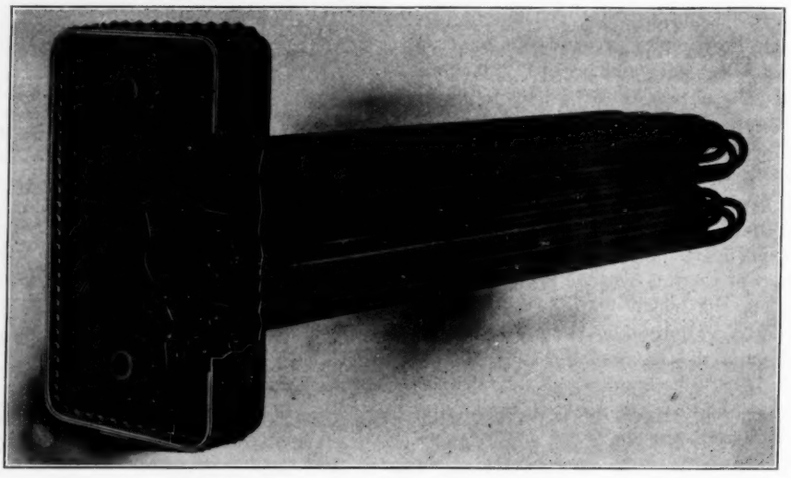


FIG. 3—DETAIL OF HEINE SUPERHEATER.

positive clutch connecting with gears on the countershaft. This lever may be placed in either of three positions; to the left to operate fast gears, to the right for slow gears, and in the center for throwing out all gear connections, thus allowing the countershaft to run idle. A second lever is either for reversing the slow gearing at the end of the countershaft, or throwing the same out of gear altogether. The third lever controls the clutch on the horizontal shaft operating the traveling crossheads, while the fourth operates the friction clutches on the countershaft, and all connection with the motor is made by this lever.

To test the accuracy of the entire weighing system above 100,000 pounds, a specimen of special steel, 2⅞ inches in diameter having an elastic limit in excess of 110,000 pounds per square inch was held in the machine by special grips with spherical adjusting ends. A specially constructed duplex dial extensometer was placed on the bar in a gage length of 24 inches, so that readings of extensions within the elastic limit to 1/10,000 part of an inch could be read for equal increments of load placed on the specimen. The readings and results obtained from this test were entirely satisfactory and proved the correctness of the machine to its maximum capacity.

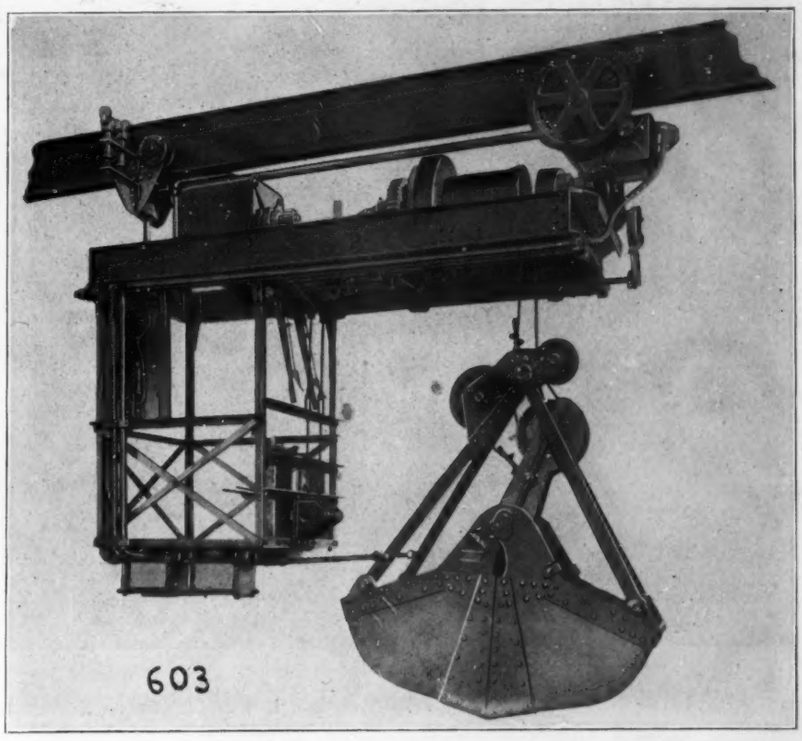
MONO-RAIL GRAB BUCKET CRANE.

A mono-rail grab bucket crane designed for use on an I-beam runway is being manufactured by the Cleveland Crane & Car Co., Wickliffe, Ohio. It is provided with swivel trucks, enabling it to go around curves of short radius, and is furnished with a two-line grab bucket of a very simple and durable type.

Both the hoist and holding drums are operated by one motor through friction clutches controlled from the operator's cage. The lowering, opening or closing of the bucket is effected by gravity; this method, it is claimed, being preferable to a crane having a separate motor for the hoist and holding line, since the rotative speed of the armature of a series motor in lowering the load will not exceed twice the hoisting speed; whereas, with the gravity fall any speed of lowering can be attained, as the motor is inoperative when the bucket is being lowered or opened. When the bucket has reached its highest position, it is sustained by a self-lubricating, mechanical brake of the double friction type, thus eliminating the necessity of the constant care of the operator and the liability of dropping the bucket, should his attention be interrupted at any time.

In order to relieve the hoisting clutches from undue wear during the process of lowering the bucket, the hoisting drums are provided with band brakes controlled by foot levers from the operator's cage. The friction clutches used for raising the load, being so designed that they will slip before the stresses reach a dangerous point, act as safety devices in case of over hoisting.

The intermediate hoisting shaft is extended to the rear end of the operator's cage and is provided with a drum that rotates at about twice the peripheral speed of the hoisting drums. This drum carries a rope which extends to the grab bucket and is used to steady the bucket, not only while it is being elevated, but after it has reached its final position and is being carried to its destination. The rope is always kept taut, since the friction drum revolves between two discs keyed to the shaft with feather keys and held against the drum by means of spiral springs made adjustable for wear. The strength of the springs is such as to exert a pull on the steady rope of from 250 to 300 pounds.



MONO-RAIL GRAB BUCKET CRANE.

A racking motor is attached to the driving truck and its speed is regulated by a drum type controller located in the operator's cage. The travel of the hoist may be made to suit almost any condition, but in ordinary practice a speed of from 300 to 500 feet per minute will be found sufficient for coal handling plants, especially where there is a curve or bend in the I-beam along the runway.

The treads of the track wheels for the driving and trailing trucks are made spherical instead of cone shaped, in order to eliminate friction as far as possible. It is well known that a cone shaped wheel running on the lower flange of an I-beam will have rolling contact along one diameter only, while the other parts of the wheel will be in sliding contact. This imposes an excessive load on the racking motor.

The machine is designed to handle large overloads with safety. The hoist of the type shown herewith has a capacity of from 20 to 30 tons of coal per hour from a car or stock pile about 150 feet distant from the power house with a vertical lift of about 60 feet.

The advantages claimed for this class of coal handling machinery are: low cost of handling material, as only one man is used to load the bucket, carry it to its destination, empty it and return it to the point of starting; low cost of installation; a low maintenance charge, on account of the small number and size of the working parts; large area served; and low power consumption.

The capital stock of the Mesta Machine Co., Pittsburg, has been increased from $1,250,000 to $2,000,000. The company is just putting the finishing touches on the large new foundry and pattern shop at its works at West Homestead, Pa.

The Wayne Iron & Steel Co., Pittsburg, has signed the Sons of Vulcan wage scale and has resumed operations. The Colonial Iron & Steel Co., Monaca, Pa., has also signed the scale and has started its puddle mills on single turn.

THE CARROLL FRICTION BLOCK FOR WIRE DRAWING FRAMES.

The accompanying illustrations show the features and performance of the Carroll friction block for wire drawing frames, and include a somewhat detailed account of its development. The block was developed by the Morgan Construction Co., Worcester, Mass., which felt for some years that modern wire drawing methods demanded a drawing block radically different from the type which is driven from its spindle by a positive clutch.

It may be stated that a first class drawing block for heavy work should have the following characteristics: 1. The block should be so driven that it may be brought up gradually and smoothly to full speed. Under these conditions the shock of the gear teeth is decreased, the breakage of points is minimized and an increase in speeds is made possible. 2. The operator should be able to start and stop the block with ease even under the most unfavorable conditions, such as with a heavy coil and draft. 3. The top of the block should be kept as low and as free from obstructions as possible to facilitate the removal of the heavy coils which are common in modern practice.

These considerations naturally suggested the use of a friction clutch for driving the block.

Location of Clutch.

Probably the most important point in any design of this character is the location of the clutch which may be placed in one of three positions:

1. On the main or bevel pinion shaft, generally in direct connection with the bevel pinion. This location was considered unsuitable on account of its inaccessibility and the extra weight of gears and spindle which the clutch was required to start. 2. On the spindle system between the spindle gear and the clutch which drives the block. The same objections apply here as in the first case. 3. Within the block itself. This location was adopted by the Morgan Construction Co. since the clutch will have the least weight to set in motion, the entire block with its clutch can be removed from its frame without dismantling any other part, and the clutch can be directly connected to the block.

The location of the driving mechanism necessitated a compact, powerful clutch and after a number of experiments with various types, the coil type was adopted. Such clutches work upon the same principle as the wire block itself, as the friction of a few wraps around the drawing block, the others being loose, pulls the wire through the drawing die, and the fritcion of a few wraps of the clutch coil around a center drum drives the block. Clutches of this type have been used in heavy transmission work for many years. As this clutch is arranged to run immersed in oil the wear is practically negligable.

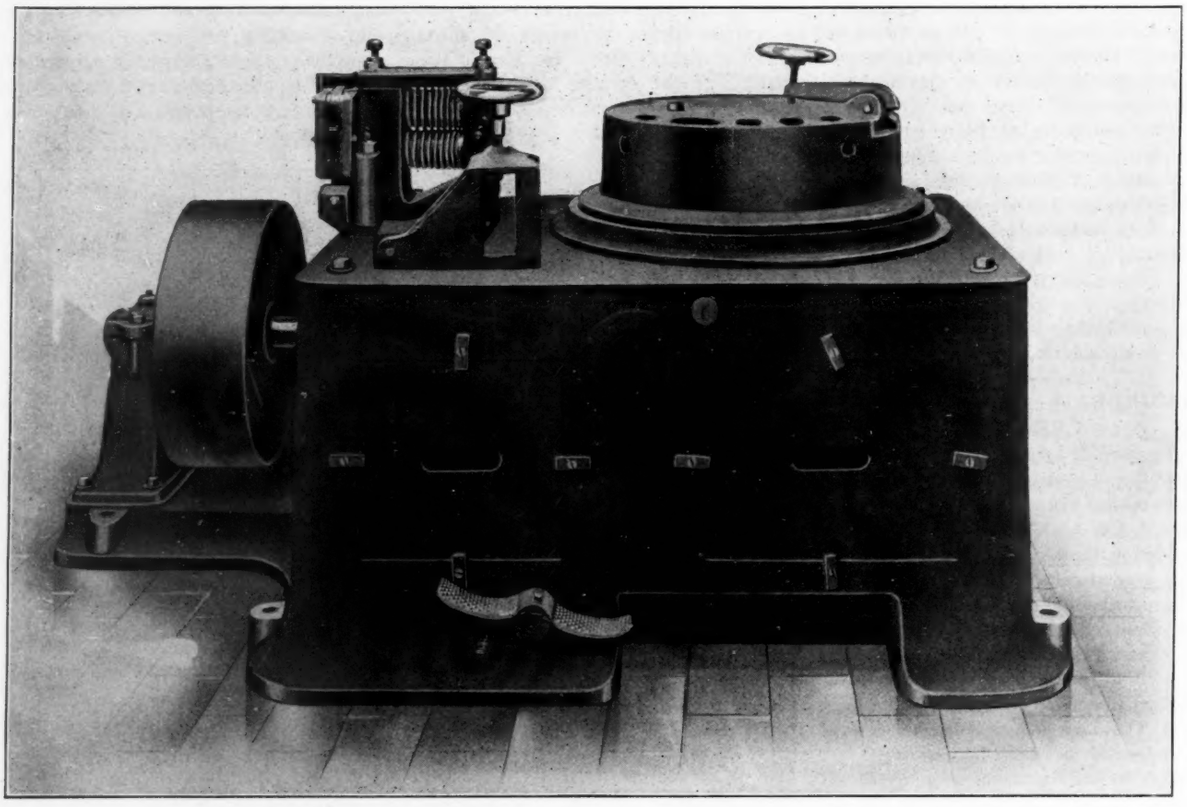


FIG. 1—FRICTION BLOCK MOUNTED ON ROD FRAME.

Detailed Description.

The general design of the block is shown diagrammatically in Fig. 2. On the spindle is a cast iron drum, A, with its outside surface chilled and

ground. This hub has an annular recess J, into which projects the concentric flange of the oil cup B, which is a shaped, annular casting within which the driving mechanism of the clutch rests submerged in oil. This cup is fastened to, and forms part of the block proper, C. Around the outside of the hub A is wrapped a soft steel, tapered, spiral coil D, with the lower end E fastened to the oil cup and the top, or smaller end, fastened to a supplemental friction ring F which, when the clutch is set, engages with a tapered surface G on the upper part of the chilled hub. This supplemental friction ring is held in contact with the tapered surface of the chilled

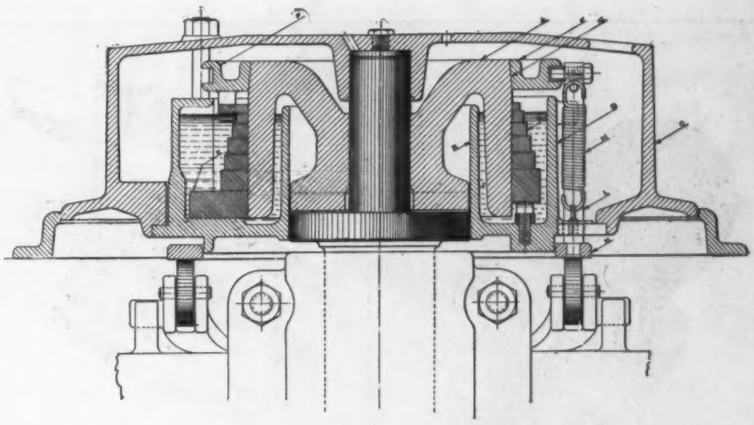


FIG. 2—CONVENTIONAL SECTION OF FRICTION BLOCK.

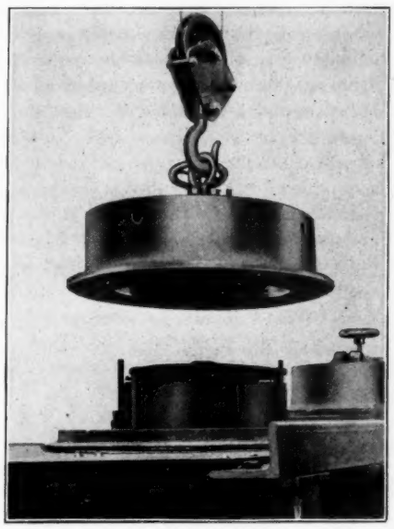


FIG. 3—FRICTION BLOCK WITH SHELL LIFTED SHOWING CLUTCH AND THE TWO RETAINING WALLS.

hub by tension springs H, but can be lifted out of contact by raising the ring K, carrying standards L which engage the ring F. It is by raising and lowering the friction ring F that the manipulation of the block is effected. The whole clutch mechanism is entirely enclosed by the shell, or block proper, which is so attached that by removing two nuts it can be lifted off and replaced by another of the same or different diameter as shown in Fig. 3.

Operation.

After the block and clutch have been placed upon the spindle the foot treadle is adjusted so that the ring K may be raised and lowered, when, if the block spindle is in motion, the block is ready to start.

Assuming that the ring K, and consequently the supplemental friction ring F, is in its raised position and that both are lowered to start the block, as the friction ring comes in contact with the taper surface of the chilled hub it begins to revolve and to tighten the small end of the clutch coil to which it is attached. Each wrap tends to take up the succeeding one until the friction between the clutch coil and the chilled hub is sufficient to slowly start the block and draw the wire through the die. To stop the block the operator has only to raise the supplementary friction ring when the clutch coil will be released.

The supplementary friction ring is free to revolve in a complete circle and hence will automatically adjust itself to any variation in the length of the main clutch coil whether due to stretch or wear. The greatest force exerted by the operator is that necessary to raise the supplemental friction ring against the springs H. This force is the same whether the block is loaded or empty and a few pounds pressure will start or stop the block under any load within its capacity.

Efficiency.

The clutch has transmitted 300 horsepower at 100 revolutions per minute with the regular clutch used in wire drawing blocks from 22 inches to 30 inches diameter. It has been shown to be a practical device for the rough work of a wire mill. In two years

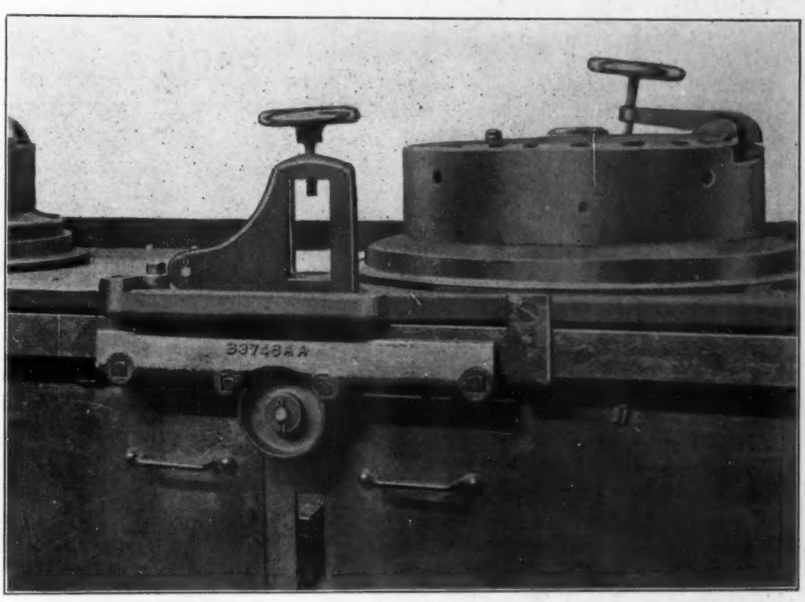


FIG. 4—FRICTION BLOCK FITTED TO A BULL FRAME.

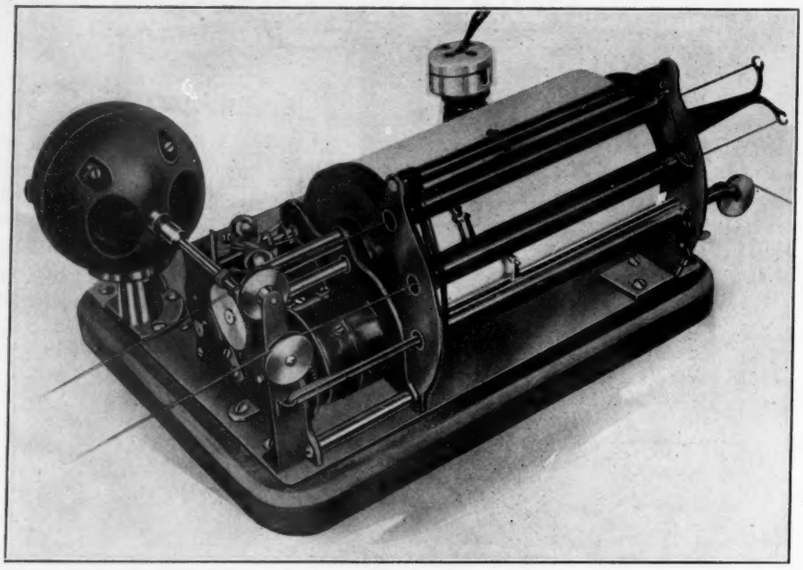


FIG. 5—INDICATOR USED IN FRICTION BLOCK EXPERIMENTS.

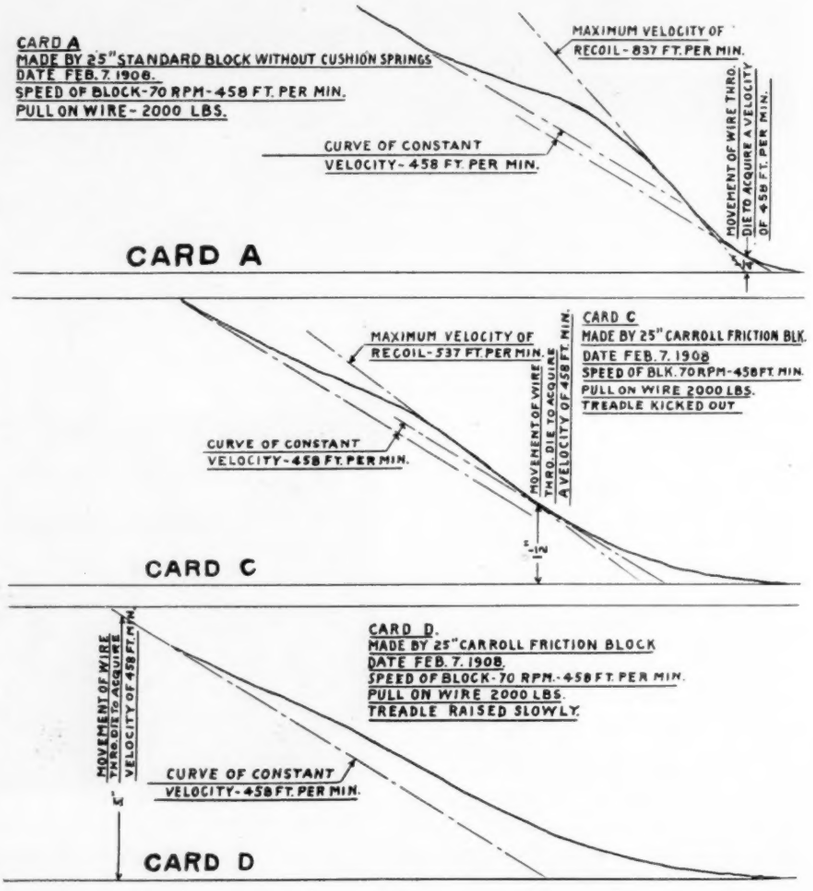
service no adjustments or repairs other than the renewal of the steel jaws which grip the end of the rod were necessary.

It is stated that these blocks can be applied to almost any frame of the vertical spindle type either without any changes to the existing frame, or with only slight changes to the upper end of the block spindles. Individual hook drawouts can be provided for each block, which do away with special drawout mechanism. It is thus possible to bring the operator nearer to his block and consequently in better position to handle heavy coils.

Below is given the record of some interesting performance tests of this device.

The experiments were made on a Morgan Construction Co. heavy rod frame, the block spindles of which consist of a cast iron sleeve 5 inches diameter, cast around a steel shaft. This cast iron sleeve had a flange near the lower end to which was bolted the driving gear, and another at the top provided with lugs for driving the block. The distance between these flanges was 1.5 feet. Upon the upper end of one spindle was fitted a friction block, on another, a standard block, fitted with a positive clutch.

The object of the experiments was to determine the length of time required to bring a point upon the surface of the block from rest to full speed when the clutch was thrown in quickly and under the most unfavorable conditions. The time required for starting up either of the blocks is comparatively short and a mechanism for accurately measuring short intervals of time was absolutely necessary for the success of the experiments. Such a recorder is shown in Fig. 5, and was found to answer the purpose admirably. It consists of a drum carrying a sheet of paper and driven uniformly by a constant speed motor. Extending parallel with the axis of this drum are three slotted tubes carrying pencil points which can be independently connected to any moving piece. In the present case it was necessary to use only one pencil in testing each block. To this pencil was attached a cord by which it could be pulled along the recording drum against the tension of a spring. The other end of the cord was made fast to a point on the surface of the block and arranged to unwind as the block started, and as the whole system was kept in tension by the spring above mentioned, the motion of the surface of the block was accurately recorded by the movement of the pencil. When adjustments had been properly made the foot treadle of the clutch was kicked out as quickly as possible, whereupon the block started and the pencil was pulled across the recording drum at the same rate of speed as any point upon the surface of the block. Inasmuch as the drum was revolving at a certain known surface speed per second, it was easy to compute the time required by the block to reach constant speed by noting the slope of the record line as will be evident from an inspection of the diagrams below. The vertical distances from the base line show the actual distance from rest


CARD A
MADE BY 25" STANDARD BLOCK WITHOUT CUSHION SPRINGS
DATE FEB. 7. 1908.
SPEED OF BLOCK-70 RPM-458 FT. PER MIN.
PULL ON WIRE-2000 LBS.
MAXIMUM VELOCITY OF RECOIL-837 FT. PER MIN.
CURVE OF CONSTANT VELOCITY-458 FT. PER MIN.
MOVEMENT OF WIRE THRO. DIE TO ACQUIRE A VELOCITY OF 458 FT. PER MIN.
CARD A
CARD C
MADE BY 25" CARROLL FRICTION BLK.
DATE FEB. 7. 1908
SPEED OF BLK. 70 RPM-458 FT. MIN.
PULL ON WIRE 2000 LBS.
TREADLE KICKED OUT
MAXIMUM VELOCITY OF RECOIL-537 FT. PER MIN.
CURVE OF CONSTANT VELOCITY-458 FT. PER MIN.
MOVEMENT OF WIRE THRO. DIE TO ACQUIRE A VELOCITY OF 458 FT. MIN.
CARD C
CARD D.
MADE BY 25" CARROLL FRICTION BLOCK
DATE FEB. 7. 1908.
SPEED OF BLOCK-70 RPM.-458 FT. PER MIN.
PULL ON WIRE 2000 LBS.
TREADLE RAISED SLOWLY.
MOVEMENT OF WIRE THRO DIE TO ACQUIRE VELOCITY OF 458 FT. MIN.
CURVE OF CONSTANT VELOCITY-458 FT. PER MIN.
CARD D

traversed by a point upon the block and the horizontal distances measured from any point toward the left give the elapsed time. Evidently a line of constant speed on such a diagram would be a diagonal straight line, and if the actual speed at which the drawing frame spindles are driven is known, a theoretical line of constant speed can be laid out.

Card A: This card was made by a standard 25-inch block weighing 355.11 pounds and driven by a positive clutch which allowed no give at starting. The rod fastened to this block required a pull of about 2,000 pounds to draw it through the die. The block spindle revolved 70 revolutions per minute, which would equal about 458 feet per minute drawing speed. This card shows that the circumference of the block acquired this velocity in a movement of about ¼-inch at the circumference. At this point the block spindle, which had been twisted more in overcoming the inertia of the block in starting than was necessary to keep the block revolving at 70 revolutions per minute and drawing the wire, started to recoil like a spring and snapped the wire up to a velocity of 837 feet per minute, then it settled back to 458 feet per minute, after which the speed curve is very nearly a straight line.

Card C: Card C was made by a Carroll friction block under exactly the same conditions as Card A, including the kicking out of the treadle by the operator in order to start the block in the least time possible with a clutch of this type. This card shows that it required about six times as long as before to acquire a speed of 458 feet. Also, on account of starting more gradually, there was much less torsion in the driving shaft as the maximum speed of recoil was 537 feet per minute.

Card D: This card was made by a Carroll friction block under the same conditions as Card C, except that the foot treadle was raised slowly by the operator instead of being kicked out as in Card C. This card shows that the block did not acquire the full speed of 458 feet per minute until the circumference of the block had moved 5 inches, or 20 times as far as in Card A, that at no time did the drawing speed of the wire exceed 458 feet per minute, and that there is hardly any recoil of the shaft. Regular operating conditions are much more favorable than those of the test, for the block can be brought up to speed almost at will.

The constant force required to start a wire block from rest and accelerate its velocity or speed varies directly as the number of revolutions per minute, and inversely as the time or distance through which it acts. A standard 25-inch block which weighed 355.11 pounds, was used in making the tests and it required a constant force of 5,035 pounds applied to the lugs at a radius of 6 inches from center of the spindle to start the block from rest and acquire a velocity of 458 feet (70 revolutions) per minute in a distance of 1 inch circular movement of a point in the circumference. To start this block in one-fourth the time or distance, as shown on Card A, it required a constant force of 20,140 pounds. If the above block acquired full speed in a circular movement at the circumference of 5 inches as shown on Card D, the constant force required would equal 1,007 pounds. To this should be added the force required to draw the wire through the die, which was about 2,000 pounds at a radius of 12.5 inches or 4,166 pounds on a 6-inch radius. Then the total constant force applied at 6 inches radius to acquire a speed equal to 70 revolutions per minute in 1-inch circular movement of a point in the circumference of a 25-inch block will be 9,202 pounds, or for ¼-inch movement, 24,307 pounds, and for 5 inches movement at the circumference as shown by Card D, 5,174 pounds, or about 21 per cent of the force necessary with the positive type of clutch. It is the large force required to start the block almost instantly, as shown by Card A, which produces the severe strains in a wire drawing machine and is responsible for the excessive wearing and breaking of its parts.

COMBINED COKE PUSHERS AND COAL LEVELERS FOR THE ILLINOIS STEEL CO.'S COKE OVEN PLANT AT JOLIET, ILL.

A machine combining on one frame a coke pusher and coal leveler has been designed by John W. Seaver, consulting and contracting engineer, Cleveland, for the Koppers by-product coke ovens of the Illinois Steel Co., Joliet, Ill. From the design prepared by Mr. Seaver, the Alliance Machine Co., Alliance, O., has built three duplicate machines. The ovens at Joliet will require the constant services of two, leaving one as a reserve unit.

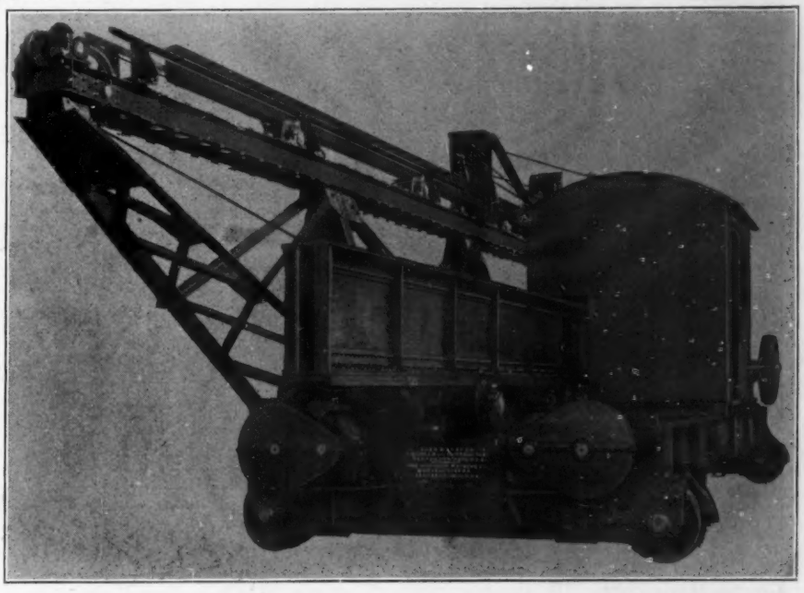


FIG. 2—END VIEW OF COKE PUSHER AND COAL LEVELER.

Fig. 1 shows a side view and Fig. 2 an end view of the machine. It will be noted that the main frame consists of four well braced riveted girders. These girders rest on end trucks, which are steel castings of the box type, of standard crane construction, so arranged that the track wheels may be readily removed. The thrust of the pusher ram is taken up by two horizontal wheels, the shafts of which are carried by the front truck casting; this construction does away with any strain in the flanges of the track wheels.

The pusher ram is of the box girder type 61 feet long, and is of unusually heavy construction. It is built of two web plates 31x½ inches, two flange plates 1x14 inches and four flange angles 6x3½ x½ inches. Each member is in one piece

with no splices. To the bottom of the ram is attached a rack for moving it. This is a steel casting 14 inches wide by 2½ inches thick with shrouded teeth, 3 inch pitch and 10 inch face. The sides of the ram are protected from the heat of the oven by removable asbestos shields. The front end of the ram is a steel casting 1½ inches thick, provided with adjustable side and bottom rolls. The ram rests on flanged rolls 14 inches diameter and is traversed back and forth by a pinion driven by a train of spur gears connected to a 50 horsepower motor.

The coal leveler is of the ladder type consisting of two bars, 10 inches deep, tapering to 2½ inches deep at the front end. This ladder leveler is moved by a plow steel wire rope which is attached to the rear end of the ladder, and is so arranged that it never enters the ovens. The rope is wound on a grooved drum, which is connected to a 25 horsepower motor by a train of spur gearing; this gearing is so arranged that the ladder may be run into the oven or withdrawn from it, and at any desired point in the stroke an automatic vibrating arrangement can be brought into operation so that the ladder takes a stroke of 5 feet backward and forward, thereby leveling the coal. This motion is entirely automatic and is under the control of the operator. The leveler ladder and the pusher ram are fitted with automatic switches for cutting out the electric current at the ends of their strokes. The sets of gearing for the pusher ram and the leveler ladder are each mounted on an independent bed plate; these bed plates contain the bearings for the motors and the shafts so that each set of mechanism is tied together and is entirely independent of the framework, thereby insuring correct alignment of the gearing at all times. By lifting out the bed plates the entire sets of gearings are taken out. Every shaft is readily accessible. Located directly over the leveler ladder and worked from the operator's cab is an arrangement for lifting and supporting the leveler doors, which are independent of the pusher doors. In the operator's cab there is placed hand traversing gear, so arranged that the operator can cut off the current from the traversing motors and adjust the position of the machine in front of the ovens by hand. A powerful foot brake is arranged to lock the machine on the track at any desired point. In the operator's cab there is also placed a set of recording voltmeters and ammeters which shows the time of and power taken by every stroke of the machine.

The motors are of the Crocker-Wheeler mill type series wound. In addition to the 25 and 50 horsepower motors for the ram and coal leveler, noted above, there are two 25 horsepower motors for traversing the machine. All of these motors are operated by General Electric controllers. The two 25 horsepower motors for the machine traverse, and the one 50 horsepower motor for the ram traverse, are controlled by one 50 horsepower controller, to which they are connected by a double throw switch. The construction of the machine throughout is of the most substantial type. The castings are bronze or steel, no cast iron being used. Every part has a factor of safety of not less than six, with the electric motors capable of an overload of 50 per cent. With the exception of the shrouded teeth for the ram traverse, all of the gears have cut teeth and are all covered with plate steel cases. The shafts are fitted with removable bronze bearings, made in halves. The bearings are provided with either compression grease cups or oil reservoirs.

All of the bolts are of the through type, no studs being used. In designing the machine especial attention was paid to arrange every part so as to permit easy inspection and removal. The machine is designed to operate at the following speeds: Traverse on tracks, 300 feet per minute; traverse of ram, 80 feet per minute; traverse of leveler bar, 120 feet per minute.

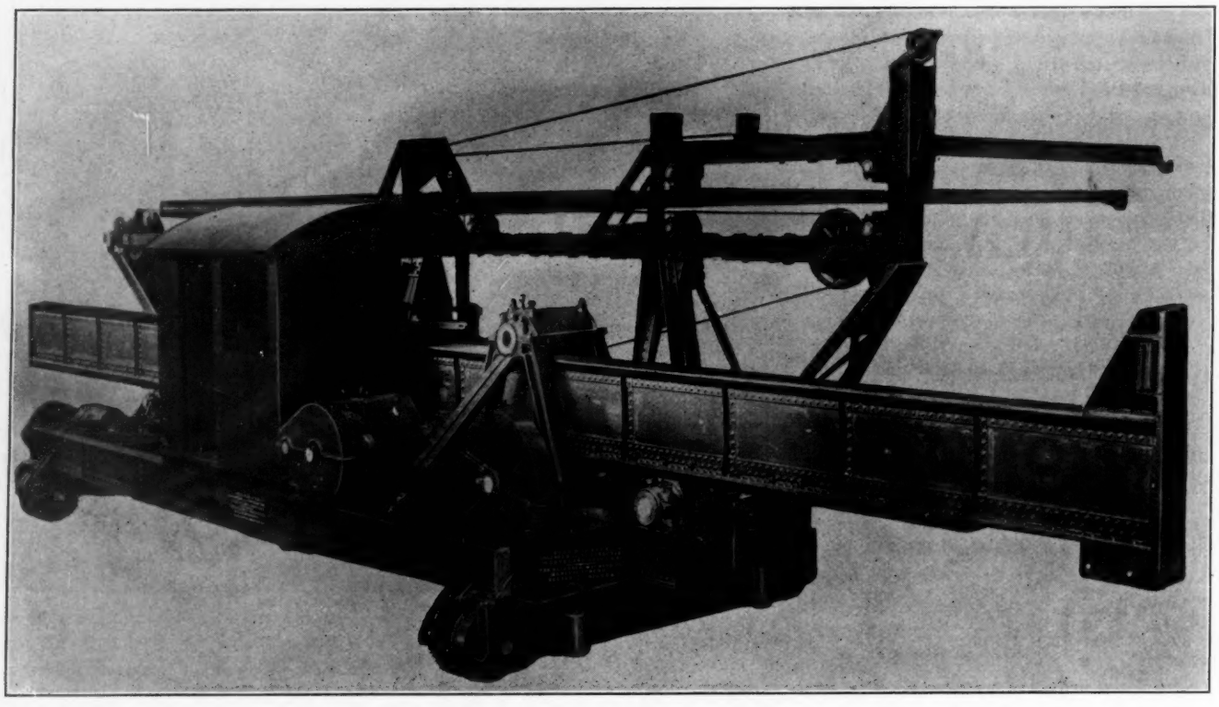


FIG. 1—SIDE VIEW OF COMBINED COKE PUSHER AND COAL LEVELER.

Out of a membership of 629,000 of the 300 trades unions making returns to the British Board of Trade *Labor Gazette*, 49,500, or nearly 8 per cent, were unemployed at the end of April. This compares with 7.5 per cent at the end of March, and 3.4 per cent in April, 1907.

BUILDING THE MODERN HIGH POWER BOILER

Rivet and plate heating practice and effect of high altitudes on stack draft discussed—Comparisons drawn with old-time methods

Interesting discussions on rivet heating, the smoke consumer problem, the best manner of influencing the new government commission in favor of uniform boiler inspection, etc., distinguished the final sessions of the American Boiler Manufacturers' Association, at Atlantic City, June 14, 15 and 16. A series of interesting facts relating to the height of boiler stacks to suit conditions in various altitudes was brought out by several speakers in relating their personal experiences. At the same time, the improved quality of modern steel in making of boiler tubes, boiler plates, and rivets was commented upon strikingly, especially in comparison with the wrought iron rivets and plates of earlier days.

D. J. Champion, of the Champion Rivet Co., Cleveland, called attention to the fact that wrong methods are often responsible for complaints as to rivets, which would not have arisen if the rivets were properly handled. He cautioned against driving a rivet except on a rising heat, finishing it before it reaches a dark blue heat. If this advice be heeded in practice, he declared that no trouble will be had with rivets made of the right quality of steel.

Col. Meier asked whether it would be possible for rivet manufacturers to determine and advise customers as to the highest possible heat their rivets would stand, and as there are now many practical devices for maintaining a certain fixed maximum temperature, this knowledge could be put to good use. Without attempting to answer this categorically, never having as yet instituted such experiments, Mr. Champion replied that rivets must be worked while they are coming, not while they are going. Mr. Hartley corroborated this statement from his experience, saying that if one takes a piece of boiler sheet and heats it from a slight heat up to blue heat he can flange it. But if the same piece be heated up to regular flange heat and then allowed to fall back to blue heat, it will surely break. One can do anything with steel on a rising heat, but not on a falling heat.

Mr. Wilkinson, referring to the matter of smoke nuisance, said that he believed it to be the province of the boiler manufacturers to take progressive ground, and to lend every aid to discover some device that will remedy this trouble of smoke. He suggested that the Dutch oven might be used as a groundwork for a practicable solution of the trouble. Boiler manufacturers are designing boilers all the time; why should they not design something to go along with them that would remedy the smoke nuisance? The speaker contended that none of the present automatic smoke consumers meet the situation sufficiently. The speaker further referred to the subject of adopting some standard depth from the grate line to the shell in boiler fronts with horizontal tubular boilers, especially where bituminous coal is used for fuel. The majority of manufacturers now make their fronts so that the grate line will be on a level or within two feet of the shell of the boiler so as to reduce the cost of the front; they do not want to give the purchaser more metal than necessary. The speaker held that with the majority of the Pennsylvania coals used this distance is not enough. In two boilers recently installed of 200 horsepower each, the old boilers replaced had only 26 inches from grate line to the bottom of shell; this was increased in the new boilers to 40 inches, it being impossible to make it any higher and allow room for steam pipe. The difference in amount of smoke made and the pronounced saving in fuel was striking. The speaker thought that 48 inches would have given still better results.

As to Federal Inspection.

Secretary Farasey suggested that if the committee on uniform boiler specifications were recognized fully by the new government commission it would have a good effect in clarifying the atmosphere generally, and render the campaign for general and uniform laws more effective in results. Mr. Wilkinson took strong ground along the line that the federal government has full authority to enact legislation compelling uniform inspection on boilers when objects of interstate commerce, and took no stock in the statement that the matter of state's rights would be preventive of the passage of such a law by the United States government. There was an opinion on the part of some present that such a law might be in opposition to state's rights and as such unconstitutional. Col. Meier appeared to be of this opinion, and therefore urged the greater necessity for general agreement and effort among all boiler manufacturers in order if possible to harmonize and unify various state laws.

The question of relative height of boiler stacks to suit different altitudes was discussed by Messrs. Wilkinson, Meier, Connelly and Hartley, and some interesting experiences related. It appeared that in shipping to high altitudes some of the speakers had miscalculated and underestimated the necessary addition to ordinary height at sea level made necessary by the higher altitudes. Both the grate size must be taken into consideration and the horsepower as well as the desired altitude. In Europe, Mr. Wilkinson incidentally remarked, boilers are sold not by horsepower but by the amount of water evaporated entirely at a given temperature. Col. Meier's rule was, roughly speaking, about 8 per cent additional height of chimney to every 1,000 feet of altitude. Enlarging the grate area will not answer unless the necessary height is obtained. The grate area may be increased in the same ratio that one would decrease the square root of the height of stack. Mr. Connelly in sending some Scotch boilers to Salt Lake City, Utah, increased the grate area 20 per cent and height 33 per cent over that at sea level, and had received excellent reports from the boilers.

Mr. Hartley asked which was the better, a round or a square stack. Mr. Wilkinson replied that a round stack is the perfect shape, and this can be proved by permitting a column of smoke to ascend through a glass container. It will be found that the smoke will not stain the corners. Mr. Hartley thought there must be a limit to the increase of height, be-

cause at a sufficient height there will be no draft at all. Col. Meier cautioned not to forget to have the openings under grates large enough to admit necessary air in allowing for the increase in height. Mr. Wilkinson said that with a boiler developing say, 200 horsepower, and requiring ordinarily a stack 100 feet high, natural draft, if one wishes to employ forced draft he can cut the stack down to 65 feet and get better results than if he left it as it was. In Pittsburg in the case of boilers developing 950 horsepower, two stacks took care of four boilers, with induced draft, the stacks being 135 feet high, which was found to be too high, and they had to be cut down to 90 feet. The remodeling could not go lower because of the method of construction of the stack. The fans were taken out and more horsepower developed than required. When one begins using forced draft with a very high stack he is forcing a larger volume of air into the stack than it is able to carry, and the gases become chilled. Mr. Connelly told of a fire boat where the stack was found to be too large in diameter to raise sufficient steam to pump, which was remedied by a "petticoat" pipe slipped inside the stack. Mr. Hartley said that it was true one can get a stack too large, but as a general rule mistakes are made the other way. For stationary work he recommended adding one-quarter to the area of the tubes, and said that he never has any trouble with the stack. Of course surroundings will affect the ratio, high buildings, hills, etc.; but in steamboat practice the height of stack is generally one-seventh of the area of the grate surface, that is, for natural draft. Forced draft has upset all former theories as to smoke stacks; and there is a great difference between induced draft and forced draft, so that the stack business is a problem oftentimes. Mr. Wilkinson observed that consumers are very apt to overlook the necessity of taking the grate area into full consideration when estimating for stacks.

Mr. Bate, of Conshohocken, Pa., of Wm. T. Bate & Son, a charter member of the American Boiler Manufacturers' Association, said that he does not use many steel rivets and holds that iron rivets properly driven are better for his class of work, light and repair work. The rivet will upset better in the hole; it is softer. He preferred to punch with a rack. A great deal of poor work is done in boiler shops on account of defective holes, and this is avoided by punching with a rack. His firm had never found a single boiler made by them explode during all their career. He uses plate from 0.47 to 0.38 gage. With regard to driving rivets properly the speaker said that his practice had always been to drive at a white heat, but many do not heat that far. The trouble in doing hand work now is the difficulty of getting properly trained, skilled men. It is of course more expensive to do hand work than to use machines. The speaker preferred iron to steel tubes provided they could be had at the same price; he did not think that there had been any improvement on tubes.

Respecting tubes, Mr. Riley said their manufacture is governed by the demands of the trade; the trade seems to be drifting at present toward steel. The United States navy has adopted steel; the railroads are all drifting into steel, both seamless and lap weld; the National Tube Works makes either charcoal or iron. If, as the previous speaker said, people who knew anything about boiler making will not put in steel tubes there must be a lot of people who do not know anything about boilers because steel tubes are being largely used by competent people all over the world.

Converted to Steel.

Mr. Rees said that although he had been at one time known as a crank on iron rivets, he has been converted to steel, and has been astonished at the advances made in the quality and effectiveness of steel rivets. Among different rivets submitted to him for careful examination as to quality, he had been greatly astonished and pleased at the high character of the product. He had put steel into boilers, along with Col. Meier, as early as 1870. In 1869 he had put it into a repair sheet and the local board said he must take it out. In 1871 he received a contract for five boilers of crucible steel which was put in the steamer Philip W. in 1872. From that time on steel was employed by him in competition with iron. He showed a sample of steel plate turned over with one blow, meeting all the requirements of United States steel, tensile strength 65,000. Col. Meier said that when they used iron they did not get 45,000 tensile strength. Mr. Rees gave testimony to the effect that he has been using flues of different makes, both iron and steel, lap weld and cold and hot drawn seamless tubes and never in all his former experience has he had flues as good as those he is using today of any of the makes of cold drawn tubes. They will turn over without a solitary crack; so far as his experience goes they are far superior to those of the old days.

Mr. Broderick, one of the new members, said that his concern is manufacturing what is known in the oil country as "firebox" boilers, also "traction engine" boilers, of which they make a large number annually. They do not have a flange fire in the shop, do not know what it is; everything is machine. The boilers they build for the oil country require the most difficult flange there is, in the speaker's opinion, and he has not had a complaint in five years.

Mr. Mitchell, speaking on another topic, related how the Standard Oil Co. had saved thousands of dollars by using American Boiler Manufacturers' Association steel for bottoms to their oil stills, which previously had been made of firebox steel, and the bottom cracked and had to be renewed after a very few runs, but with American Boiler Manufacturers' Association steel had been known to make 2,500 runs without renewal, meaning a tremendous economy to a concern of the magnitude of the Standard Oil Co. It is perhaps the largest user of this material in the country. Referring to the present state of the boiler manufacturing industry, Mr. Mitchell declared that the United States stands today in this line the peer of any other country in the world. The speed of our battleships compares with that of any, and this is due to the quality of their boilers as much as anything else. He congratulated the convention upon the presence and co-operation of the progressive steel manufacturers of this country in attendance on the convention.

The United States board of general appraisers in a recent decision laid down the rule that where a collector of customs has a pro forma invoice and a consular invoice he must assess duty on the merchandise at the value stated in the consular invoice notwithstanding the value stated in the pro forma invoice is higher. The true market value should be determined on regular appraisement or reappraisement proceedings.

Official announcement is made that the Cambria Steel Co. is operating its mills at Johnstown, Pa., on a larger scale now than at any time since the panic began last October.

Close Marks Highest Prices of the Year

The average price of New York stocks last week reached the highest of the year. The advance which began four weeks ago carried the average price of 20 railroad stocks up to 106¾, and 12 industrials to 72½. The average gain for the 32 stocks from July 1 to July 23 was almost 7 per cent, the average price being only slightly below the average on a corresponding date last year. On Thursday and Friday there was somewhat of a reaction, the first that has occurred for several weeks, but on Saturday there was a sharp recovery, several stocks reaching new high points.

Monday the market opened buoyant with prices at the highest average of the year and they closed near these points. A 10-point advance in Westinghouse Electric Tuesday was the feature of the market, the statement of President Westinghouse as to the certainty of the success of the plans for taking the company out of the hands of receivers shortly being given the credit for the sensational rise. On Wednesday, following the decision of the United States Court of Appeals on the Standard Oil fine, the general market, which had been somewhat irregular, closed strong and higher. Then came the reaction of Thursday and Friday, but on Saturday a strong rally brought prices to near the highest at the close. The bond market was conspicuously active, exceeding $600,000 in one day and showing the largest total for the week of any week this year. Almost all the copper stocks participated in the rise, one of the largest producers advancing its price of the crude material.

Money was easier throughout the week, especially time loans, call loans being unchanged from 1 to 1½ per cent. The commercial failures for the week were 289, compared with 250 the previous week, and 215 the corresponding week last year. Exchanges at all clearing houses in the United States showed a decline over the two preceding weeks and a decline over last year of 2.1 per cent, this being the smallest loss over 1907 shown since the opening week of June.

The actual statement of the New York clearing house banks showed an increase in loans of $3,501,700; specie, increase $10,603,200; deposits, increase $13,497,900. The percentage of actual reserve was 29.47, an increase of 0.44. State banks and trust companies showed loans decreased $1,942,800; total deposits, increased $1,982,900, and percentage of reserve 36.1, a decrease of 0.2. The number of shares dealt in during the week was 4,858,127, compared with 2,706,600 the preceding week and 3,078,150 for the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $1,623,000 compared with $820,000 the preceding week and $326,000 for the corresponding week last year.

Financial Notes.

The Amalgamated Copper Co. declared a dividend of 50 cents a share, payable Aug. 1; the Buckeye Steel Castings Co., of Columbus, O., the regular quarterly dividends of 1 per cent on common and 1½ per cent on preferred, payable Aug. 1; the J. G. Brill Car Co., the regular quarterly dividends of 1¾ per cent on preferred and one-half of 1 per cent on common; the Pressed Steel Car Co., the regular quarterly dividend of 1¾ per cent on preferred, payable Aug. 26; the Pullman Co., the quarterly dividend of $2 per share, payable Aug. 15; the National Lead Co., the regular quarterly dividend of 1¾ per cent on preferred, payable Sept. 15; the Standard Roller Bearing Co., the regular quarterly dividend of 1½ per cent on preferred, payable Aug. 1.

Copper Stocks.

New York.—Amalgamated Copper closed 73⅛, a net gain of 3¾.

Boston.—Butte Coalition closed 26⅛, a net gain of ⅜; Calumet & Arizona closed 116, a net gain of 3; Calumet & Hecla closed 660, no change; North Butte closed 76½, a net gain of 2¾; Quincy Mining closed at 92, a net gain of 5.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. July 25	Changes in Week	Date 1908 Ann. M't'g	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	11¼	+ ⅝	Sept. 3	19,820,000			
Allis-Chalmers pr	35¾	− ¾		16,150,000	7 cum	1¾ Q.	Feb., 1904
American Can	5¾	+1	Feb. 3	41,233,300			
Am. Can pr	60	+ ½		41,233,300	7 cum	1¾ Q.	July, 1908
Am. Car & Foundry	89¼	+1	June 25	30,000,000		¾ Q.	July, 1908
Am. Car & Fdy. pr	103	+1¾		30,000,000	7 n. c.	1¾ Q.	July, 1908
American Loc	53¾	+2⅜	Oct. 20	25,000,000	5	1¼ Q.	Aug., 1908
American Loc. pr	106	+1		25,000,000	7 cum	1¾ Q.	July, 1908
American Ship	38	−3¼	Oct. 14	7,600,000	4	1 Q.	June, 1908
American Ship pr	100¾	− ⅛		7,900,000	7 n. c.	1¾ Q.	July, 1908
Am. Steel Foundries	8	.....	Oct. 6	15,810,000			
Am. Steel Foundries pr	39¼	.....		17,240,000	6 cum	2½	Aug., 1904
Barney & Smith	50	.....	June 2	2,000,000	4	1 Q.	Sept., 1907
Barney & Smith pr	105	.....		2,500,000	8 cum	2 Q.	June, 1908
Bethlehem Steel	19	−1	April 7	14,862,000			
Bethlehem Steel pr	48	+ ½		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	36⅜	+ ⅝	March 17	45,000,000*	6	1½ S. A.	Aug., 1908
Cambria Iron	45¼	+ ¼		8,468,000*	4	2 S. A.	April, 1908
Chicago Pneumatic Tool	25	− ½	Feb. 17	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	32½	+ ¾	Oct. 19	34,235,500		3¼	April, 1902
Crucible Steel	6¼	+ ¼	Oct. 21	24,578,400			
Crucible Steel pr	45	+3¾		24,436,500	7 cum	1 Q.	Dec., 1907
Empire Steel	8	.....	Feb. 26	1,254,770			
Empire Steel pr	45	.....		2,500,000	6 cum	3 S. A.	July, 1908
Fay & Egan	100	.....	Feb. 18	1,000,000	6	1¾ Q.	May, 1908
Fay & Egan pr	110	.....		1,000,000	7 cum	1¾ Q.	May, 1908
General Electric	145¾	+2¾	May 12	65,167,400	8	2 Q.	July, 1908
Harbison-Walker	13	.....	Jan. 20	18,000,000		½	Oct., 1907
Harbison-Walker pr	70½	− ½		9,600,000	6 cum	1½ Q.	July, 1908
International Pump	23	−1⅞	June 2	17,787,300		1	April, 1905
International Pump pr	79½	− ½		13,835,000	6 cum	1½ Q.	Aug., 1908
Lackawanna Steel	35	+1	March 11	34,971,400			
Lake Sup. Corp	5¼	−1¾	Oct. 7	40,000,000			
New York Air Brake	76	+4	June 18	8,012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	130	.....	Feb. 5	8,500,000	6	1½ Q.	June, 1908
Niles-Bement-Pond pr	100	.....		2,000,000	6 cum	1½ Q.	May, 1908
Otis Elevator Co.	34	.....	March 16	6,158,600		1½ S. A.	April, 1908
Otis Elevator Co. pr	88	−1		5,449,500	6 n. c.	1½ Q.	July, 1908
Penn. Steel	60	.....	May 11	10,750,000			
Penn. Steel pr	98	+1		16,500,400	7 n. c.	3½ S. A.	May, 1908
Pittsburg Coal Co.	12¾	+ ¾	Feb. 10	28,853,400			Nov., 1906
Pittsburg Coal Co. pr	44¾	+2¼		27,080,800	7 c.	1¾	April, 1905
Pressed Steel Car	33	+2¾	Feb. 19	12,500,000		3	Aug., 1904
Pressed Steel Car pr	94½	+4½		12,500,000	7 n. c.	1¾ Q.	Aug., 1908
Pullman	167	+5	Nov. 11	100,000,000	8	2 Q.	Aug., 1908
Railway Stl. Spring	42¼	+5½	March 5	13,500,000	4	2 S. A.	April, 1908
Railway Stl. Spring pr	93½	+1½		13,500,000	7 cum	1¾ Q.	June, 1908
Rep. Iron & Steel	21	+1¼	Oct. 21	27,191,000			
Rep. Iron & Steel pr	73¾	+2¾		20,416,900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	62½	+3½	March 11	10,000,000	5	1 Q.	June, 1908
Sloss-Sheffield pr	98	+1		6,700,000	7 n. c.	1¾ Q.	July, 1908
U. S. Pipe & Fdy.	24	.....	June 24	12,500,000	4	1 Q.	Dec., 1907
U. S. Pipe & Fdy pr	70½	+1⅛		12,500,000	7 n. c.	1¾ Q.	Sept., 1908
U. S. Steel	45⅜	+ ¾	April 20	508,302,500	2 n. c.	½ Q.	June, 1908
U. S. Steel pr	108¼	− ⅜		360,281,100	7 cum	1¾ Q.	June, 1908
U. S. Steel 5'	99⅞	+ ⅜		463,798,000	5	5 A.	.....
Va. Iron, Coal & Coke	60	+6	Nov. 17	9,073,680			
WestinghouseElec	78½	+18¼	June 24	23,933,200*	10	2½ Q.	Oct., 1907
WestinghouseAir Brake	105	+7	Oct. 6	11,000,000*		2½ Q.	July, 1908

Par value of shares, $100, except those starred (*), $50

NEWS FROM MANY INDUSTRIES

New Buyers:—

The Midway Reduction Co. of East Liverpool, O., is in the market for a garbage furnace. Address John H. Hohmann, manager.

The Alabama Boiler Works Co., Inc., Birmingham, Ala., has been chartered by W. R. Gardner, S. A. Fuller and Leigh Watkins, with $12,000 capital stock.

The Emperor Lead & Zinc Co., Joplin, Mo., has been incorporated with $50,000 capital. The charter members of the company are: F. J. Coffmann, Fred W. Kelsey, Clement Steele and others.

The Perfection Oil Tank Co., Syracuse, N. Y., to manufacture oil cans, cups, receptables and tanks, with $2,000 capital stock has been incorporated by D. Lawton Evans, Lewis C. Wilcox, Arthur S. V'all.

The Work Casting Co., Buffalo, with $5,000 capital stock, has these incorporators: J. Harison Welch, Edward G. Northron and Robert W. Welch, Buffalo. The company will operate a foundry and manufacture metal castings.

Joseph C. Lauber, Otto J. Klaer and Emma Lauber are incorporators of the J. C. Lauber Co., South Bend, Ind., which has recently been incorporated to manufacture sheet metal products. The company has a capital of $10,000.

The Tennessee Blow Pipe Co., Chattanooga, Tenn., has been granted a certificate of incorporation through R. T. Wright, Sr., C. A. Ryerson, J. A. Quist, W. E. Wilkerson and C. C. Crawford. The capital stock is placed at $25,000.

The Williamsville Iron Mountain Ore Co., St. Louis, has been granted a charter to do a general mining business. Those interested are: Marcus Marks, W. S. Meloy and A. M. Christiansen. The company has a capital of $100,000, fully paid.

The Co-operative Foundry Co. of Rochester, N. Y., a New York corporation, has been granted a charter to do business in Illinois, and will locate at 120 Baird avenue, Chicago. The company is capitalized at $200,000, to deal in stoves and furnaces.

Articles of incorporation have been filed by the John W. Brown Hardware Co., Syracuse, N. Y., to manufacture hardware and hardware supplies. The capital stock of the company is $10,000, and the incorporators include: John W. Brown, Glenn S. Brown and Frank C. Brown, Syracuse, N. Y.

The Elliott Gas Hive Co., New York City, has been incorporated with $50,000 capital to manufacture machinery, boiler economies, etc., by Thadeus V. Elliott, 1221 Ditmas avenue, Brooklyn, N. Y.; William F. Marsh and Clarence McMillan, 220 Broadway, New York City.

The Braddock Ornamental Iron & Wire Works has filed articles of incorporation through Treasurer Schuyler C. Richard, Turtle Creek, Pa. The other directors of the company named include Edward D. Stamabugh, East Pittsburg, Pa.; Edwin J. Hershman, Homestead, Pa., and others. The capital stock is $15,000.

Joseph A. Kirby, M. M. Lannin and A. K. Doty, Rochester, N. Y., and others are the incorporators of the Fruit Machinery Co., Rochester, N. Y., which has been chartered to manufactu.e machinery, tools and mechanical appliances. The capital stock has been placed at $50,000.

New Construction:—

Extensive repairs are being completed at the Sterling, Ill., plant of the Dillon-Griswold Wire Co. preparatory to resuming operating.

Love Bros., of Aurora, Ill., are remodeling the Fox River Iron Works, at Lovedale, with the intention of making it one of the large steel casting works of the west.

The Chattanooga, Tenn., Roofing & Foundry Co. is making extensive improvements to its plant, including enlarging the metal shingle department to twice its former capacity.

Announcement is made that the Birmingham Pipe & Fitting Co. will begin rebuilding at once that portion of the East Birmingham, Ala., plant which was recently damaged by fire.

The Columbus Iron & Steel Co. is putting in steel storage bins for iron ore at the Columbus, O., plant, which will be completed before fall by the McClintic-Marshall Construction Co., Pittsburg.

The American Malleables Co. has announced plans to build an addition to each end of the foundry at Lancaster, N. Y., 100 x 200 feet. The foundry and annealing rooms will be enlarged one-third.

The Hewitt Mfg. Co., Atlanta, Ga., has secured a lease on a brass foundry plant in that city which will be repaired and remodeled, a new foundry building 80 x 200 feet will be erected and machinery purchased.

The machine and pattern shops being erected for the Coatesville Foundry & Machine Co., Coatesville, Pa., are nearing completion. Dunleavy Bros. have just finished laying 5,000 square feet of cement in the two buildings.

The American Steel Package Co., Defiance, O., has announced plans to install additional bending and rolling machinery which will mean the employment of 50 additional workmen. It will also add twelve fires to its plant.

The Warwick Iron & Steel Co., Pottstown, Pa., will build three Roberts central combustion chamber three-pass fire brick stoves at the No. 1 furnace and has retained Frank C. Roberts & Co., Philadelphia, as engineers for the work.

Plans are being drawn for remodeling the plant of the National Machinery Co., Tiffin, O. The main building will be extended 150 feet, making the complete structure 100 x 450 feet, and better light facilities will also be added.

The Montrose Metal Shingle Co., Camden, N. J., is tearing out old boilers and machinery at the rear of the plant to make room for additional storage capacity. The plant is now working at capacity on a good run of orders.

The Barber Car Co., Watertown, N. Y., has completed negotiations for establishing a street car manufactory at York, Pa. The company which will be affiliated with the York Bridge Co. will construct a plant adjoining that of the bridge concern.

A. T. Zentmyer is planning to establish a foundry at Hagerstown, Md., to replace the old plant. The main building will be constructed of concrete block, with an iron roof, one story, 40 x 150 feet, with a wing 35 x 50 feet, and the pattern shop will be of sheet iron construction, 30 x 50 feet.

The boiler plant of the Kaukauna shops of the Chicago & Northwestern railway, Appleton, Wis., is being torn down to be replaced by one of larger capacity, and the boiler house will be doubled in size. The three new boilers of 135 horsepower each, built by the National Boiler Works, will be installed shortly.

The Galard Co., 31 Union Square, West, New York City, recently incorporated, announces that it will shortly increase materially the facilities for manufacturing its product, and is negotiating for a large manufacturing building in the locality of New York City. When the negotiations are completed it will be in the market for machinery and general fittings.

The Tamaqua Mfg. Co., Tamaqua, Pa., is rebuilding its plant recently

destroyed by fire. Nearly all of the walls to the bottoms of the windows have been completed. The shops are being built entirely of concrete and steel, with galvanized steel and asbestos roofing. The main shop building measures 90 feet 6 inches by 234 feet 3 inches. The company expects to ship machinery from the new shops by the latter part of September.

The Boston Bolt Co., 40 Farnsworth street, Boston, is preparing to erect an addition to its plant, of brick construction, five stories, 50 x 100 feet. It will be fully equipped with the most modern machinery for the manufacture of machine screw products and it is expected to have the plant completed by the latter part of the year. The company reports a brisk business and adds that the business depression has been but little felt by it.

The Walcott & Wood Mfg. Co., Jackson, Mich., has increased its capital stock $25,000, and has arranged to erect a modern machine shop near its present factory. The shop will be equipped with traveling cranes and other essentials for building high class machine tools.

The Minneapolis Steel & Machinery Co., of Minneapolis, Minn., is completing a new building of brick and steel, 250 x 300 feet, to replace the structure burned down. The plant, when entirely completed, will have a capacity of 2,500 tons of bridge and structural steel per month.

The National Brake & Electric Co., Milwaukee, manufacturer of air brakes and electrical machinery, advises that a steel foundry 80 x 220 feet, together with core and annealing ovens, is being erected and is nearly completed. The building will be fully equipped with electric traveling cranes, 15-ton acid open-hearth and crucible furnaces, and, in fact, every improvement known to the foundry trade. It is expected that the output will be from 60 to 70 tons of steel castings a day. The company has been known as a producer of the highest quality crucible and open-hearth castings, which must necessarily be of the best grade owing to its own requirements. The orders for the traveling cranes have been placed, and the equipment of furnaces, ladles, etc., is now under consideration.

General Industrial Notes:—

The United States Equipment Co., Chicago, has changed its name to the Sheffield Car & Equipment Co.

The new foundry of the Warren Machine & Iron Works Co., Warren, Minn., turned out its first casting July 16. The foundry was recently erected at the rear of the company's machine shop.

The Temiskaming & Northern Ontario railroad has ordered 50 steel underframe box cars, 80,000 pounds capacity, from the Dominion Car & Foundry Co.

The Jacobson Machine Co., Warren, Pa., announces that it has received contracts that will keep the plant busy for some length of time, running at full capacity.

The first heat was taken off by the Metropolis Foundry & Machine Co., Metropolis, Ill., on July 11. The castings were said to be smooth and the quality excellent.

The Covington, Ky., board of aldermen recently passed an ordinance granting the Licking Rolling Mills Co., recently re-organized, exemption from taxes for five years.

The Delphos Mfg. Co., Delphos, O., has added an additional piece of ground to the location and will erect a new building for the galvanizing department, as well as placing a new railroad switch.

The Dighton Foundry Co., Taunton, Mass., noted recently as newly incorporated, advises that it possesses most of its equipment, and proposes to do only a small business in ranges and heaters.

Pit No. 1 of the Bessemer, Ala., plant of the United States Cast Iron Pipe & Foundry Co., was put to work July 18 for the first time this year. The pit makes pipe from 36 to 72 inches in diameter.

The Wisconsin Engine Co., Corliss, Wis., advises that the only improvement being made to its plant at present is the installation of a sprinkler system, but that other plans are under consideration.

President E. M. Lewis, of the Lewis Machine Works, Anniston, Ala., which was recently destroyed by fire, has received insurance money on partial loss, and is now consulting with the other stockholders with a view to rebuilding the plant.

Notice has been given that the British government will put its new patent law into effect Aug. 28, despite the efforts of the United States and Germany to secure a postponement. The new law requires foreigners obtaining British patents to manufacture the patented goods on British soil.

The Illinois Corrugated Metal Co., Bloomington, Ill., the increase of whose capital stock was recently noted, advises that it was not for the purpose of doing additional new building, but was a re-investment of accumulated dividends in additional stock.

Frank L. Wells and Ole Arneson have bought the Peter Lippert foundry at Kenosha, Wis., which they have been running for 10 years under lease. It is announced that the Frank L. Wells Co. will be incorporated and at least a part of the stock sold to the older employes.

The re-organization of the Hisey-Wolf Machine Co., Cincinnati, has been arranged, and Walter J. Friedlander will be president of the company. An addition to the plant on its location in Cumminsville is to be built, approximately 100 x 165 feet.

The Cook Spring Co., 420 to 424 East 106th street, New York City, manufacturer of springs, advises in relation to its incorporation that it is simply incorporating in the state of New York where its plant is located, whereas it had been incorporated previously in the state of New Jersey. No new equipment will be required or new building done.

Ten railroads and 37 miscellaneous corporations with total outstanding capital stock of $1,072,776,723, have either reduced their dividends in the past half year from a year ago or passed them altogether. Total dividend payments of these companies show a reduction of 39 per cent compared with the same period last year.

The directors of the Malleable Iron Co., Ironton, O., organized recently by electing these officers: President, D. C. Davies; vice president, J. M. Barringer; and secretary, H. H. Mittendorf. On account of the discouraging outlook, the directors decided to make no attempt to start the plant at this time.

The National Supply Co., representing the National Tube Co., the Reading Iron Co., and the Youngstown Sheet & Tube Co., represented by the Oil Well Supply Co., and the South Chester, Pa., Tube Co., all manufacturers of iron and steel casings, are carrying oil well casing stocks in Fresno, Cal., worth probably $500,000.

The partnership existing between Frank H. Sears and George J. Zimmerman, known as the Central Foundry Co., Detroit, has been dissolved. George J. Zimmerman will continue the business as sole owner under the name of the Central Foundry Co. All the accounts and debts of the old firm will be cared for by Mr. Zimmerman.

Charles A. McKeehan, of Bellingham, Wash., and Charles N. Secrist have formed a partnership under the name of the Wilmington Foundry Co., and have leased the building formerly

occupied by the Farquhar Furnace Co., Wilmington, O. It is the intention of the proprietors to have the plant ready for business Aug. 1. They will make a specialty of job castings.

The equipment and stock of the Nutting Machine Co., Dayton, O., has been sold by a receiver for $10,095. The heavy machinery was sold to the Motch & Merryweather Machine Co., Cleveland, for $7,500, and the Israel Bros. Co., Dayton, purchased other equipment for $1,560. The remaining assets went to the Davis Sewing Machine Co., and the office fixtures were sold to a Dayton firm.

The American Car & Foundry Co. announces that it is employing 2,000 more men than six weeks ago. In the meantime it has received these orders: 400 steel coal cars from the Lackawanna; 700 freight cars from the Chicago & Northwestern; 200 30-ton box and 250 40-ton gondola cars; 500 all-wood 30-ton box cars from the International & Great Northern.

C. L. Kenyon has filed articles of incorporation for the Kenyon Pressed Steel Pump Co., with a capital stock of $25,000. The principal place of business is at Tama, Ia. The company has leased the machine shop and foundry of W. F. Johnson, and is putting the plant in shape for business. It is proposed to assemble the pumps at Tama for the first year, after which complete machinery will be installed for making all the parts.

At the recent annual meeting of the stockholders of the Ralston Steel Car Co., Columbus, O., the board of directors and former officers were re-elected. Reports from the sales department show that inquiries are increasing, with the probability of closing some good contracts in a short time. Up to this time, repair work and orders for steel underframes have been sufficient to keep the organization of the plant intact. During the year, a number of improvements were made, and additional betterments are contemplated.

The Straubel Machine Co., Green Bay, Wis., marine and gasoline engine builder, advises that the foundation of its new shop is finished and the building will be ready for occupancy Oct. 1. The new shop will be 60 x 100 feet, with concrete foundations, red brick walls, saw tooth roof and steel construction. The company is moving all its machinery from the old plant, sold to Carl Hartman, and in the new building will continue to manufacture marine gasoline engines. A few new tools have been added, and also a heating outfit.

The Jamison Coal & Coke Co., Pittsburg, is actively pushing before the trade its "Crab Tree" washed smithing coal. The coal is mined from the Pittsburg seam in the Greensburg basin, and by the company's process of washing, the slate and similar impurities are eliminated. It is claimed for the coal that it will not clinker, that it makes a good clean weld and a quick coke, and that it maintains a hot and even heat in the forge. The guaranteed analysis is as follows: Ash, 6 to 7 per cent; volatile matter, 28 to 30 per cent; fixed carbon, 60 to 64 per cent; sulphur, under 1 per cent.

The Warren Foundry & Machine Co., Phillipsburg, N. J., cast iron gas and water pipe, writes relative to a fire which recently occurred at its works, that the blaze was insignificant, doing little damage, and that the company is not under any necessity of rebuilding any portion of its plant.

The receivers of the Pope Mfg. Co. have been authorized to carry on the business of that concern for another year at the plants in Hartford, Conn., and Westfield, Mass. The receivers recently applied for leave to continue the plants in operation, promising that all approved claims will be paid in nine months.

Fires:—

Shanz & Eckert's machine shop, Perth Amboy, N. J., was damaged to the extent of about $3,000, on July 15.

The roof the foundry of the Salt Lake Engineering Co., Salt Lake City, Utah, was slightly damaged by fire, July 14.

The machine shop of Losey & Kelly, Orange, N. J., was severely damaged by a fire July 14, several adjacent plants being damaged also.

The coal elevator at the Wellsville, O., plant of the American Sheet & Tin Plate Co., was damaged to the extent of $40,000, July 21.

The Greenpoint Metallic Bed Co., Greenpoint, L. I., suburban to New York, was recently considerably damaged by fire caused by an explosion in the paint department. The loss was chiefly confined to the paint and drying departments.

Trade Notes:—

John F. Allen, 370-372 Gerard avenue, New York City, reports recent sales of Allen riveting machines to the Eastern Steel Co., Pottsville, Pa.; York Bridge Co., York, Pa.; Delaware Bridge & Iron Co., Delaware, O. The Allen riveter has proved to be especially well suited for car construction work and has many distinctive features. These are fully explained in a recent catalog, copies of which may be obtained on application.

The Hanna Engineering Works, 820 Elston avenue, Chicago, riveting engineer, announces that it has added to its already large line, the entire riveting business of the Quincy-Manchester-Sargent Co., Plainfield, N. J., including the New Jersey company's full assortment of Pedrick & Ayer, hydro-pneumatic plain toggle "American" riveters, pneumatic punches, etc., and is now prepared to offer to the trade a variety of styles and sizes of riveters to meet the most exacting conditions and fill the desires of such manufacturers as have a preference for a particular style of machine.

Owing to the increased demand for their product in the central and middle west, the Mesta Machine Co. of Pittsburg has opened an office in Chicago at No. 844 Commercial National Bank building, from which point the company's business in rolling mill machinery, gas and steam engines, condensers and machine molded gears, steel castings, etc., will be taken care of by Lane Johnson. Mr. Johnson, who for some time has been connected with the Pittsburg office of the Mesta company, is a graduate of the Massachusetts Institute of Technology, and for five or six years previous to his accepting a position with the Mesta company was actively engaged in the iron and steel industry, holding for some time a prominent position with the Colorado Fuel & Iron Co.

TRADE PUBLICATIONS.

SHEARS.—The International Electric & Engineering Co., 148 Chambers street, New York City, 1908 catalog, 9 x 12 inches, 12 pages. This catalog illustrates and describes a new type of the "S&N" heavy duty beam shears, coping machines and angle shears. It also illustrates the best methods of blocking the beams in the machine preparatory to shearing.

THERMOMETERS. — The Bristol Co., Waterbury, Conn., Bulletin No. 92. This catalog contains a price list of standard bulbs for Bristol's class II recording thermometers; also prices of charts and other accessories for Bristol apparatus.

MOLDING MACHINES.—Henry E. Pridmore, Chicago, catalog No. 6, 5 x 9 inches, 30 pages. This little booklet illustrates a new line of molding machines, specially designed for stove foundries. The machines are fully described and illustrated and the book is embellished with numerous examples of machine molded stove plate. Data regarding the size and capacity of the various machines are also included.

SHAPERS.—The Cincinnati Shaper Co., Cincinnati, catalog F, 6 x 9 inches, 70 pages. This catalog contains a description, including illustrations and scale drawings of the complete line of shapers and accessories built by the Cincinnati Shaper Co. The book contains interesting data regarding the individual motor drive of shapers and illustrates numerous unique arrangements of both geared and belted machines.

PAINT MACHINERY.—The C. O. Bartlett & Snow Co., Cleveland, catalog No. 26, 6 x 9 inches, 32 pages. This booklet illustrates and gives prices of a complete line of paint mixers, paint mills and combined mills and mixers.